The Builder.

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Ecclesiastical Dilapidations.

LORD GRIMTHORPE has recently published a Bill which he has drafted on the subject of Ecclesiastical Dilapidations. He is to be congratulated upon sticking to law and not venturing on architecture, for his very acute, if aggressive, intellect can do good service if it is applied to right purposes. But it is impossible for Lord Grimthorpe ever to refrain from having a tilt at some one, and on the present occasion he falls foul of the Diocesan Surveyor. Lord Grimthorpe plumes himself on having discovered that "the only three parties interested in a dilapidation question are the new incumbent, the outgoing one or his representatives, and the patron." This, he says, "nobody seems to have discovered before it occurred to me last year." This is a pleasant way of suggesting that the existing law is in some measure one for the benefit of diocesan surveyors rather than for that of the persons interested in a benefice. The main principle of Lord Grimthorpe's proposed measure is, therefore, to do away with the Diocesan Surveyor, with official interference and official fees. It has certainly the great merit of simplicity, and we willingly admit seems, with some modifications, capable of being turned into a useful measure; although, as we shall see, the proposal to extinguish the Diocesan Surveyor is futile.

Briefly stated, the operative part of the Bill is to this effect: as soon as a benefice is vacant the patron may inspect the buildings which belong to it. In other words, the surveyor will ascertain what is the extent of the dilapidations, if any. Thus he safeguards himself. Next, the new incumbent is to send to the patron and to the diocesan registry "a full description of the repairs and alterations, if any, which he proposes to do . . . . and may proceed with the same unless the patron, within a month after receiving the description, objects to any of the proposed alterations being made without a faculty." Assuming that there is no objection on the part of the patron, "the incumbent may proceed with the alterations as well as the repairs at his own expense, and when he has either paid or contracted to pay for them he may claim from the last incumbent so much of the cost of the works as he thinks himself entitled to . . . . with a statement of the grounds of the claim verified by affidavit." If there is further dispute the matter is to be settled by the Diocesan Chancellor. As the Diocesan Chancellor is not a surveyor it is obvious that the matter must, after all, really be disposed of by the Diocesan Surveyor.

The really desirable point in this proposed legislation is that the parties interested should, in the first place, come together themselves. The Diocesan Surveyor should be an umpire called in when parties cannot agree. But if this is to be so, then the new incumbent should send to the late incumbent or his representative a description of the dilapidations at the time when he sends his description to the patron, together with the cost of the same. It may be that the outgoing incumbent will pay the amount demanded; if so, there is no more to be said. If, on the other hand, he will not do so, then the surveyors of the two incumbents should meet and survey the building together; and if after that they cannot agree, then the Diocesan Surveyor should be called in as an arbitrator. Lord Grimthorpe does not forget that the incoming incumbent would like to have the cash wherewith to pay for the cost of repairs from the outgoing clergyman. If this is to be obtained it is pretty clear that the cost of the repairs must be sent to the late incumbent before the new incumbent has even "contracted to pay" for the required repairs, otherwise he will probably have to wait for some time before much work can be done.

We do not see the least advantage either in affidavits or in sending a description to the Diocesan Chancellor. What is needed is a practical and businesslike settlement of a purely technical building question, with as little expense, with as few fees, and as small an amount of ecclesiastical red tape and delay as is possible. If this object is to be gained, ecclesiastical officers and officials must be avoided. At the present time, when the incomes of the clergy of the Church of England are so greatly reduced from what they used to be, it is more than ever needful that the question should receive careful attention. In many cases the new incumbent has no money of his own with which to pay for repairs, and the late incumbent, or it may be his widow or his children, are still less able. Therefore, we have to bear in mind the sound old maxim that prevention is better than cure. The most practical way of dealing with this question of dilapidations is as far as possible to prevent them from arising. This is not impossible. If there were no dilapidations—or next to none—the now numerous cases would not arise of the representatives of a late incumbent being unable to pay the amount due from them. The English parson is not a person of much foresight, and he does not trouble himself, in many instances, much about the future—at least in the shape of dilapidations. The remedy seems to be easy. The patron, advised by means of a skilled agent, surveys the buildings of the benefice every second year, and such work as is required to be done should be notified to the incumbent, and he should thereupon either execute the work, or the patron should do it at the incumbent's expense. By this means a small periodical expenditure would prevent the demand for a considerable sum when the benefice becomes vacant. Some will say that the incumbent of to-day can often hardly make both ends meet. But sooner or later these expenses have to be met; it is more merciful to the clergy that they should be paid for in instalments, and it is much to the advantage of the buildings. In some cases a comparatively small expenditure early in the day would prevent a much greater expenditure in the shape of dilapidations.

If, after one of these periodical sur-

veys, the incumbent appeals against the patron's demand on the ground that the work is unnecessary, then—but not before—the Diocesan Surveyor should be called in as arbitrator. He is usually an architect, and a great deal of the work required to be done after a periodical survey would be of so small a kind that the survey would be better placed in the hands of a person of less importance. The functions of the Diocesan Surveyor should be almost entirely those of an arbitrator.

In discussing this question of periodical surveys, no mention has been made of those sections which deal with the question of the Ecclesiastical Dilapidations Act, 1871—but for a very good reason, that they are ridiculous. Section 12 enacts that "it shall be lawful for the bishop, on the complaint in writing of the archdeacon, or of the rural dean, or of the patron of a benefice, that the buildings of the benefice are in a state of dilapidation, or at the request of the incumbent, to direct the surveyor to inspect the buildings." Thereupon a great deal of circumlocution may result in some repairs. But not only does this Section make no provision for periodical surveys, it practically prevents them, because such a survey as that referred to in Section 12 is the result of a complaint by an ecclesiastical superior. Therefore all concerned will try to avoid such a survey, resulting, as it necessarily does, in fees and expenses. What is needed is not a kind of punitive survey, but one of a business nature, not reflecting on the incumbent, but which he will regard as a business matter, in the same light as the annual inspection of the elementary school, its pupils, and its buildings by the Government Inspector. Of the Bill, which seems to have its rise in the Diocese of St. Albans and which has also been published, we say nothing, because it appears altogether unreasonable. The basis of it is an annual payment of 20 per cent. on the rateable value of the buildings, which shall go to a special fund, out of which dilapidation shall be paid. But why should an incumbent pay in advance? Why have more official machinery when it is so desirable to have as little as possible?

Lord Grimthorpe's Bill, with some amendments, might be made a useful measure; but as an incumbent is in principle bound to keep the buildings of his benefice in proper order, it is in the highest degree unbusinesslike not to take practical measures when incumbents shall allow them to fall out of repair. In other words, dilapidations should be prevented. That is a much more pressing and practical matter than how best to settle the question of dilapidations when an incumbent quits the benefice. There are hundreds of clergymen of the Church of England to whom this matter is of vital importance, and it is one which demands a practical remedy.

THE SCIENTIFIC STUDY OF ELECTRICITY.

PROFESSOR PERRY, in his Presidential address to the Institution of Electrical Engineers, gave a well-deserved rebuke to those electricians who are in the habit of sneering at mathematics. Some years ago, when mathematicians began to work out the theory of the new electrical apparatus that was coming into vogue, many of the results arrived at were erroneous, founded as they were on insufficient data or inaccurate assumptions. The practical man, finding their results of little use, preferred to waste thousands of pounds in workshop experiments rather than assist the mathematicians by publishing experimental data which would enable them to arrive at the correct theory. It has been the habit of many members of the Institution to sneer at theory, to point out how the usual vector diagrams were drawn wildly out of scale, and to assert that the best course for the youthful electrician was to be apprenticed straight from school to some well-known firm of engineers, where he would get a good workshop training. This course has been widely followed, and, as might have been expected, with disastrous results. There are many young working electricians now making laborious efforts to master the theory of their profession, which they could easily learn if they had a slight scientific and mathematical training, such as the Institution of Civil Engineers rightly insists that its junior members must have.

The scoffing tone in which so many electricians have in past years indulged when referring to theory has done the younger generation a great deal of harm. Most of the English electricians at the Paris Exhibition were astonished at the progress foreigners have made in the standardisation of electrical apparatus. Nearly all the dynamos were of the revolving fly-wheel type, and steel instead of cast-iron was nearly always used for the field magnets. That peculiarly English product, the two-pole continuous current dynamo, was not to be seen, and every machine gave evidence of the mathematical training of the designer. Professor Perry said that there is hardly one engineer of eminence in Switzerland, France, or Germany who has not passed with honour through the classes of one of their great science universities. Whilst many of our electrical firms have been blundering on trying to improve designs drawn up many years ago, many foreign companies, like the General Electric Company of America, have kept thoroughly abreast of the scientific progress of the age by means of their experts, whose reputation is world-wide. One has only to read foreign electrical journals to see how thoroughly they are awake not only to every advance in our practical knowledge but to every advance in theory. It is astonishing to find also that the highly mathematical papers appearing in these periodicals are often written by members of the staff of engineering firms or central stations.

Professor Perry said a great deal about the teaching of mathematics with which we agree, but we must dissent from his disparaging remarks about schoolmasters. His experience at Clifton must have shown him that it is not the schoolmasters who are to blame, but the system. So long as Civil Service and University examinations are conducted as they are at present, so long will the masters train the best boys in their present manner. No public school would keep a headmaster long who failed to keep up the record of university and other successes. We quite agree with what he says about "our wretched system of weights and measures," and the pity of it is that it is still necessary to go on pointing out the unnecessary brain labour we compel ourselves to undergo.

The President referred with justifiable pride to the new method of teaching mathematics that has recently been introduced into nearly all evening classes in science schools throughout the country. Most of the reforms introduced are those he advocated in a paper read before the Society of Arts in January 1880. It is a pity that when educational reforms were being accomplished something could not have been done to wipe out the teaching of statical electricity in evening schools. It is a subject of exceeding complexity, and the questions set are horribly puzzling and useless.

Professor Perry made a spirited appeal to the members not to allow the Society to degenerate into a mere trades-union, but to set up a high professional standard, encourage scientific research, and recognise the past services of scientific observers with gratitude and respect. To the outside public it must seem strange that such an appeal should be necessary to electricians whose everyday work utilises the discoveries of Franklin, Volta, Ohm, and Faraday. Yet perhaps it was necessary. We have heard appeals made to members not to be disloyal to the profession by pointing out, in the Press and elsewhere, some of the drawbacks, for example, of electric traction; any one who hinders the progress of the applications of electricity to industrial purposes being regarded as a kind of traitor. Again, some amongst what Professor Perry would call the "Calibans" of electrical engineering cynically consider that the object of the Institution is to promote legislation to enable members to make money as rapidly as possible. The President was unsparing in his condemnation of such soulless ideals, and he pointed out that, even from the commercial point of view, it was a very short-sighted policy to rush forward cheap and ill-considered schemes simply "because of the ignorance of legislators and of gas and water companies."

What the President was referring to was well if somewhat quaintly described by Mr. James Swinburne at a meeting of the Society last May:—

> "The next element of cost that I do not think tramway people ever consider nearly enough is the eating of pipes. Of course, generally, the pipes are not ours and the cost need not be included. I suppose Tramway Companies fully understand the advantages of the English law on the question of eating pipes. The law, as far as I understand it, is this: if you are a private individual and eat anybody else's pipes, you are liable for damages; but if you are a public company or under an Act of Parliament, then you can eat pipes as much as you like, provided you take ordinary precautions and do not eat more pipes than you can help."

What Mr. Swinburne was referring to is, of course, the corrosion or eating away of gas and water mains by leakage currents from the tramway rails. This can be avoided altogether by having an insulated return for the current, but this is more expensive.

Professor Perry gave an eloquent justification of the action of the Royal Society Committee in insisting that the electric tramways in the neighbourhood of Kew Observatory should work on a system that would not disturb the magnetograph observations that were commenced there forty-five years ago. An eminent electrician, he said, had recently stated that it was an injustice to hamper the

progress of electric tramways "for the sake of making observations that never have given and never may give to the world any important results." Considering the money and ungrudging labour that have been already spent in the endeavour to probe the secret of the earth's magnetism, it is no wonder that Professor Perry waxed indignant over the contemptible utilitarianism of this statement. "Surely I need not appeal to your cupidity, but it is quite possible that our knowledge of this secret may enable us to tap a tremendous store of Nature's energy." Altogether the opening meeting of the session was a most successful one, and it augurs well for the profession that the Institution has a thoroughly popular President, who is unsparing in his condemnation of our shortcomings as electrical engineers.

NOTES.

The London Water Question.

AFTER a long discussion, the London County Council on Tuesday decided again to promote a Bill in the forthcoming Session for the purchase of the Water Companies. It does not appear that even those who voted in favour of the measure have any belief that it will be passed. Mr. H. P. Harris, in moving an amendment that a Bill should be introduced to give effect to the main principles of the Report of the Royal Commission, said that in his opinion a Bill for purchase and a joint authority would have a much better chance of going forward than any such Bill as was now proposed, but his amendment was lost by 70 to 44. A further amendment by Mr. Campbell, to the effect that the matter of initiating legislation on the subject should be left to the Government, who should be asked to bring in a Bill on the whole question, was also lost, and finally the original recommendation of the Water Committee was carried by 71 to 43. It is pretty obvious that the real motive of the County Council in proposing a Bill which, in view of the Report of the Royal Commission, they obviously cannot expect to carry, is a desire not to be left out in the cold. They have been especially stung by the fact that the Royal Commission, in sketching out their ideal of a joint authority for water supply, only proposed to allot them a proportion of one-third in the representation. There is no doubt some reason in their attitude in regard to this point, as the Water Committee urge in their Report—"Seeing that three-quarters of the population supplied by the Companies reside in London, and that of the rateable value upon which water rate is charged 84 per cent. is within the county, we cannot believe that members representing London, whatever their views as to the general question of a Trust, can assent to this proposal which so manifestly ignores the predominant interests and rights of the metropolitan ratepayers." It would seem reasonable that the Council, which represents the majority of ratepayers concerned in the water question, should in any such scheme have a larger representation than this. But the fact is that the Parliamentary as well as the public mind has been seized with a decided scepticism as to the ability of the London County Council to deal with the water question; a scepticism certainly not without basis. The ostensible argument put forward for the Council's proposed Bill—that of keeping the purchase question alive in Parliament,—is however not without its point. Purchase of the Water Companies, on some terms at all events, is not only desirable but practically inevitable; and it is no doubt true, as the Water Committee again urge, that the longer it is delayed the more it will cost. There may therefore be something to be said for the policy of keeping the spur applied, and ensuring that there shall at all events be a purchase Bill before Parliament, even though its failure be a foregone conclusion.

The President of the Local Government Board.

THE Local Government Board is a Department which is so much concerned with details and so little with policy that it is one largely ruled by the permanent officials. The President is, therefore, of less importance than in some other offices. But the resignation of Mr. Chaplin and the appointment of Mr. Long are certainly in the public interest. Mr. Chaplin is a sporting country gentleman, about the last person in the world to preside over a Department concerned with sanitation, working-men's dwellings, London water supply, and similar matters. Mr. Long is something of the same kind, but more of the administrative country gentleman, such as are doing good work on County Councils. He is younger than his predecessor and more likely to desire to make a name for himself, and has also had some administrative experience, and has shown some independence both administratively and politically. It is probable, therefore, that he will exercise a more personal influence than Mr. Chaplin; and if he is moved to press any point on Local Authorities, whether rural or urban, he is not likely to let it drop. It is to be hoped that Mr. Long will give special attention to the carrying out by Local Authorities of existing laws. As we have said many times, it is not new legislation which is needed so much as the putting into force of the present law.

Sir F. Bramwell's Street Proposal.

IN suggesting, in the *Times* of Wednesday, an application to new London streets of a modification of the method adopted in the Rows of Chester, Sir F. Bramwell has rather misled his readers as to the precise conformation of the Chester Rows. They do not supply, as he suggests, two tiers of first-class shops one above the other, and two lines of foot passengers' pavement. On the road level at Chester there is either no foot-walk or only a very narrow one, and the space beneath the Row is not available for shops—it is not high enough; only for stores and trade entrances. Sir F. Bramwell's proposal is for first-class shops and a broad pavement on the street level, while the upper walk, answering to the Chester "Row," would necessarily be some 15 ft. higher, involving a flight of some twenty-five to thirty steps to reach it. The Chester Rows are reached by flights of only ten or a dozen steps. The admirable architectural effect of the Chester Rows, with their open gallery, would be entirely ruined by Sir F. Bramwell's "one variation" from them, by which the upper part of the buildings projects part way over the "Row," with no visible support. There is no constructional difficulty in this, but the appearance of a whole length of shops with the upper part overhanging to this extent would be anything but satisfactory in an architectural sense, while the shelter afforded in stormy weather would be but very partial. The Chester Rows are no doubt, both in regard to architectural appearance and comfort to the public, an almost ideal form of city street. From the point of view of the shop-keepers there is the drawback of an interference with light and air; but on the whole the Chester Row in its entirety would be far better worth carrying out than Sir F. Bramwell's proposed modification of it. There is one point that must be remembered, however, viz., that in such a city as London the employment of two-storied streets would necessitate the doubling of the police patrol. The foot-passenger bridges which form part of Sir F. Bramwell's scheme are no new idea; they have often been suggested for London; but they could be carried out by the provision of special stairs at each end of them, without involving the adoption of the Row system.

Proposed Widening of London Bridge.

ACCORDING to a statement in the *City Press*, the Bridge House Estates Committee are recommending the widening of London Bridge by granite corbelling on which the footpaths will be projected so as to be increased from 9 ft. to 14 ft. This is not so bad as the former proposal to have an iron balcony, but it is hardly possible that it can be carried out without spoiling the appearance of the bridge, and the design ought to be publicly exhibited before anything definite is done about it. Considering that the whole clamour about the inadequacy of the bridge has been made hitherto in reference to the vehicular traffic and the roadway, it seems really preposterous that we are now to be asked to allow the disfigurement of the bridge by a scheme which will not relieve the vehicular traffic, but will leave the roadway just as it was.

The Memorial Bridge, Washington.

IN preparing designs for the National Memorial Bridge to cross the Potomac River at Washington, the successful competitor, Professor W. H. Burr, voluntarily adopted the course which we have consistently advocated as the proper one to be followed in all such cases. Two distinct designs were submitted by Professor Burr, who received assistance in architectural matters from Mr. E. P. Casey. The difficulty which the modern engineer appears to find in conforming with artistic requirements is emphasised by the fact that although Professor Burr was awarded the first premium, neither of his schemes was accepted in its entirety. As a matter of fact, the judges decided that the engineering features of one design, and the architectural features of the other should be adopted, and it is considered that the result will be an extremely dignified and beautiful structure. Briefly described, the bridge will consist of a bascule span, of 159 ft., for the navigable waterway, and on each side three concrete and steel arches, each of 192 ft. span. The Washington approach will comprise 550 ft. of embankment, and twelve 60-ft. semicircular concrete and steel arches. On the Arlington side of the river the approach is to include 1,450 ft. of embankment and fifteen arches of similar form and construction to those on the Washington bank. The heavy Roman arches originally intended to surmount the

bascule piers are, fortunately, to be replaced by piers more in keeping with the main structure and its situation. Other advantageous modifications are to be found in the adoption of curved instead of straight lower chords in the bascules; and in the employment of a curve of greater radius for the bascules than for the side arches, thus preserving in the bascule span a form appropriate to its natural uses. The piers in and near the navigable channel are to be built on "bed-rock" by the pneumatic process, the caissons being filled with concrete, and the remaining piers will be built up within coffer-dams. Masonry arches and towers will mark the principal divisions of the bridge, and they are to be decorated with bas-reliefs and statuary commemorative of the foundation and development of the American Republic. The bascule arms, supported on trunnions, will be counterpoised by backward extensions and weights, and they are to be operated by electric motors. Instead of following the original idea, which involved upper and lower roadways, the new bridge will have a single deck, with a roadway 60 ft. wide, for tramway and ordinary vehicular traffic, and two paths 12 ft. wide for foot passengers.

Rural Cottages.

A CORRESPONDENT of the *Times* "E. D. T.," gives some details of a scheme on which he and others are engaged in Kent with a view to some kind of solution of the housing problem in rural districts. It is proposed to purchase land at 50*l.* per acre, and divide an acre into five parts, and sell each plot. On this is to be erected a bungalow cottage, which, together with the land, it is estimated will cost 150*l.* It is pointed out that a payment of 6s. a week would enable a man to obtain a life policy of 150*l.*, repayable in twenty years, so that for this annual sum he could insure his life and pay off his mortgage. In other words, for about the same sum as he now pays as tenant for a cottage he would eventually become an owner. There is no doubt that these bungalow cottages, and others of various kinds, of iron, might be erected in country districts, but it is doubtful if in all cases they would be passed by the Local Authority. The question of local by-laws in regard to buildings is one which requires investigation. These by-laws do not prevent jerry-building, and yet at the same time they often prevent the erection of convenient outhouses and additions which would add much to the habitability of small dwellings.

Mr. Albert Goodwin's Exhibition.

THE title, "In Praise of all the Churches," which is applied to the collection of drawings by Mr. A. Goodwin at the Society of Fine Arts Gallery, merely shadows forth the fact that in nearly all the subjects a church or cathedral is introduced. They are a beautiful collection of over sixty pictures showing a great variety of style and colour, and some of them suffer from that over-refining of effect which gives a scene more the look of dreamland than of open-air Nature, though their charm is undeniable. Among the best are "Torre Annunziata" (9), with its Classic dome; "Thun" (10); "Durham" (33), and "Wells (Twilight)" (39). There are others of a less dreamy character, such as "Rye Church and Town" (2), and "Hastings" (8). The large painting of "Vanity Fair" (58), with the Celestial City seen above, beneath two immense bridges which span the valley, is a fine ideal scene. Considering how long this artist has been drawing architecture, it is surprising to find that there are oversights in regard to perspective; in "The Jews' House, Lincoln," for instance (19), the west towers are not quite right in relation either to each other or to the central tower; in "Durham" (33) the centre tower is not in line with the western ones; in "The Domes of Pisa" (34), the baptistry leans as well as the "leaning tower," though not quite so much; and in "Wells" (39), the north tower appears considerably lower than the south one. Among the sketches in which a powerful landscape effect is the principal object, "Sunset after a Storm" (36), is a fine effect, and also "The Sultan Discovering the Palace of the Young King of the Black Isles" (54), an Arabian Nights illustration, and weird enough for the subject.

The Modern Gallery.

OF the collection of drawings of cathedrals by Mr. Herbert J. Finn, at the Modern Gallery in Bond-street, some have we think been exhibited before; we seem to remember, at any rate, "Morning, Canterbury Cathedral," and "The Cloisters, Canterbury;" the latter one of the best, giving very well the effect of the time-worn masonry. The exhibition includes a number of mostly rather large water-colours of Lincoln, Canterbury, and Ely; that of the west front of Ely is a fine and effective drawing, but does not give the true character of the side tower. Generally speaking, Mr. Finn's style of treating architecture pictorially is not exactly satisfying to architects; there is too ragged and washy an effect about his buildings. "Lincoln Cathedral, Morning" (43) is one of the most satisfactory, because it represents a misty morning in which the general composition only can be seen, without much of the detail. In most cases the effects are good, but there is a want of the texture of stonework and the solid structural appearance of a building.

The New Gallery.

THE exhibition of the "Society of Portrait Painters" at the New Gallery contains no portrait of the highest order, and there are a good many rather hard and commonplace paintings; but there are some works marked by individuality of style and treatment, and some very good ones of the class of well-painted portraits with good execution of dress and accessories; satisfactory as pictures and probably as likenesses, though not calculated to arouse enthusiasm. Among those distinguished by special character may be named Mr. C. H. Shannon's conventionally arranged group in the old style, "The Bunch of Grapes" (32), portraits of a mother and daughter; Mr. Guthrie's "The late Alexander Osborne" (48), a grim kind of likeness of a grim elderly gentleman; Mr. Kennington's decorative picture of "A Lady in a Venetian Dress" (59); Mr. Brough's of "The Hon. Bernard Maxwell" (62) in a hunting costume—a very broad and free piece of work; Mr. F. Carter's "Miss Jessie Phelps" (116), a very expressive portrait which might have been more prominently hung; and Mr. Jack's "Ron" (122), a boy in a red hat with a dog at his side. All these have something special in character or treatment which gives them an individual interest. Among those which, without possessing special character, are excellent specimens of portrait painting, we may class Mr. Lavery's "Mrs. Steuart Clarke" (8); Mr. Collier's "Joyce" (26), a girl in a red dress; Mr. Jack's "Mrs. Donald Smith" (52); various portraits of ladies by Mr. Blake Wirgman; and Mrs. Jopling's expressive head of "Lady Danvers" (68). A small picture by Mr. Watts, "A Study" (87), hangs among the portraits as a kind of voice from another world.

The New English Art Club.

WE fear the New English Art Club, whose twenty-fifth exhibition is now open at the Dudley Gallery, is almost ceasing to be an artistic event of any importance. It still retains Mr. Furse, who exhibits an equestrian portrait of a huntsman and a vigorous sketch for a portrait of Lord Roberts. Miss Alice Fanner hardly equals her previous efforts in vigour and freedom, though the group of houses in her "Richmond on the Thames" stands out finely. The most noticeable things after these are certain studies of sunlight on foliage, as in "The Avenue" (63) by Professor Brown; "A Wooded Lane" (86), by Mr. W. W. Russell; and "A Sewing Lesson" (43), by Mr. Hugh Carter, which adds the interest of two pleasing and expressive figures. Mr. Rich's "Shoreham" and "Closing Day" (19 and 20) are small landscape studies with an individuality of style; Mr. Kneen's "Beach at Aber" (52) shows a fine sky; Mr. J. Henry's "Kent Cornfields" (54) and "The Mill-pond" (112) are good sketches; and though Mr. Wilson Steer's "The Home Meadow" (98) appears a mere blotch on a close view, we must admit that from the opposite side of the room it really looks quite like a landscape with an atmospheric effect. This is not much, however, to pick out of 126 pictures, and none even of these we have mentioned can really be called important works. As to some of the performances among which one has to grope in search of art, we commend the visitor's attention to (among others) Nos. 11; 34 (a collection of colour blots); 35 (this looks like a child's early effort at drawing a scene); and 39, of which the title and the intention are alike unintelligible.

THE STATISTICS OF SAXON CHURCHES.

BY PROFESSOR BALDWIN BROWN.

VIII.—CATALOGUE RAISONNÉ OF EXAMPLES.

(Concluded.)

DISTRICT VIII. A.—DURHAM and NORTHUMBERLAND.

WE follow here the arrangement explained in the last paper, and notice first the Saxon features of the buildings generally, to the exclusion of the square west towers of the special class, which will be treated presently in connexion with those of District VII. In this northernmost region occur some of the most interesting examples in the whole country, and Monkwearmouth, Jarrow and Escomb, in Durham, Hexham and Corbridge, in Northumberland, are deserving of special mention. Monkwearmouth porch is, perhaps, the most remarkable monument of pre-Conquest architecture and suggests problems not easy of solution.

DURHAM.

The extreme south of the county gives us at *Sockburn-on-Tees* a ruined chapel with clear signs of a pre-Conquest date. Aycliffe, near Darlington, is catalogued by Mr. Hodges as pre-Conquest, but the criterion is only the somewhat hazardous one of the character of the masonry. The same may apparently be said of Staindrop, near Barnard Castle (not seen by the writer).

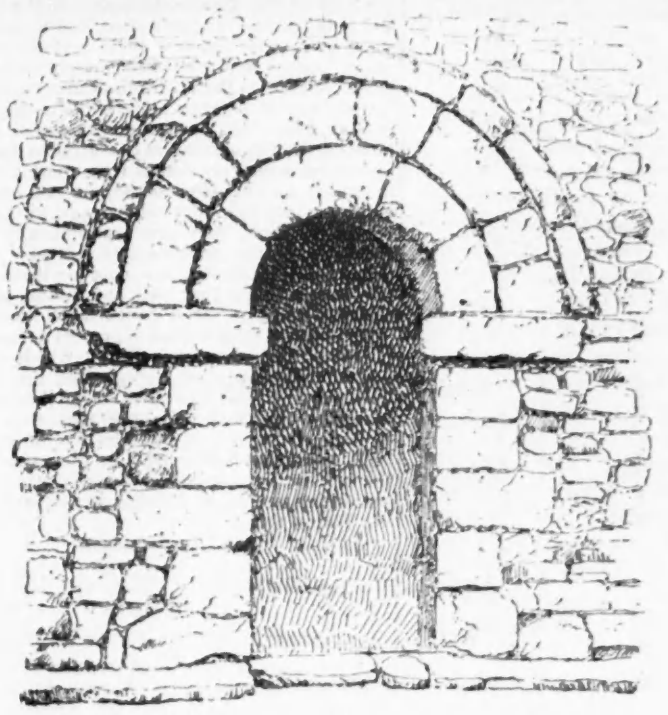

Fig. 27.—West Doorway of Tower, Clee, Lincolnshire.

Fig. 28.—"Keyhole" Light, West Face of Tower, Clee. (Height 2 ft. 8 in.)

In the Stockton neighbourhood occur three good examples.

Norton is a fine cruciform church with central tower. This and the transepts are Saxon; the former has characteristic openings, the latter big-stone quoins.

Billingham, besides its tower, noticed below, seems to have preserved its Saxon nave, attested by its lofty and narrow proportions.

Hart.—The evidence here is not so distinct, but parts of the existing edifice appear of Saxon date. The discovery of turned baluster shafts similar to those at Monkwearmouth and Jarrow is in favour of this ascription.

Escomb, near Bishop Auckland, is conspicuous in the first rank of existing pre-Conquest monuments as a complete and almost untouched church of the Early Saxon period that has remained in use, so far as we know—save for a few recent years—from the time it was built until now. It has a nave and square-ended chancel, a chancel arch that may be Roman, and door and window openings of very early character. It is fully described, as are all the other early monuments of the district, in the above-noticed papers in "The Reliquary."*

Monkwearmouth.—The Saxon remains here were described in the *Builder* for October 12, 1895. They consist of a west porch, on the walls of which was subsequently reared a tower, with the west wall, and possibly the south wall of the church. The outstanding features of the structure are, first, the facts that the porch is covered with a barrel vault, of a kind that occurs in the crypts of Wilfrid at Hexham and at Ripon and nowhere else in existing Saxon work, and that the west window in the chamber above it is of the Classical form only found at the seventh-century church at Brixworth; and next, the occurrence of elaborately turned baluster shafts and figure and animal carving of a remarkable kind. There is very strong evidence, both monumental and historical, connecting this work with the contemporary of Wilfrid, Benedict Biscop, who founded the monastery of Wearmouth about 674 A.D. The tower above the porch is much later, but has a pre-Conquest character. The nave is about 66 ft. long to the present Early Norman chancel arch, and the Saxon nave was probably the same.

Jarrow.—It seems likely that we possess in the present chancel of the church of St. Paul at Jarrow-on-Tyne a portion, at any rate, of the nave of a church built here when the monastery of Jarrow was founded at about the same time as that of Wearmouth. The tower which comes before this chancel is certainly Early Norman, and can be dated at about 1075. A large collection of turned baluster shafts of a kind only found in this part of the country is preserved in the porch of the present church. They came from another old Saxon church on the site, destroyed in 1783, that had a nave of the remarkable length of 28 paces by a width of only 6 paces, and a height of wall of nearly 30 ft.*

Hexham.—The crypt under the central tower of the present abbey church is very similar to that at Ripon, and was constructed by the orders of Wilfrid about the year 674. The Hexham crypt is largely composed of Roman worked stones, that were abundant in the neighbourhood of the great wall and Roman stations. The plan differs from that at Ripon in that it seems to pre-suppose a church with its altar end to the east, while at Ripon the contrary orientation is indicated. The extensive works now in progress at Hexham may result in bringing to light the foundations of the nave of Wilfrid's famous church, and establishing on monumental evidence the nature of its plan.

Heddon-on-the-Wall possesses some good remains of l. and s. work at the south-east angle of the nave.

Corbridge, where one of the great Roman roads to the far north crossed the wall on its course into Caledonia, possesses a pre-Conquest church in which the square west tower has been erected on the walls of an earlier porch. The opening from this former porch, now the lowest stage of the tower, into the church is through a grand arch, 16 ft. high by 8 ft. 2 in. wide, peculiarities in which show that "the arch has been bodily transferred from a Roman gateway." The side walls of the nave, broken through by later arcades, are original, and have marks of the old internally splayed windows, specimens of which are preserved in the west wall of the church and also above the west entrance to the porch.

Lindisfarne.—Some masonry in the lower part of the chancel walls of the Norman priory church, and also (possibly) the foundations of an apse earlier than the present east termination, may be remains of the pre-Conquest church which was removed to make way for the present structure.

Whittingham.—Only the lower portions of the original square west tower are here preserved, but they exhibit l. and s. work in the quoins as well as in the western quoins of the adjacent nave. The tower had till 1839 mid-wall work with baluster shafts on the belfry stage.

DISTRICT VIII. B.—It is proposed to deal in a final section with the class of square western towers in the four north-eastern counties, called in these papers "Lincolnshire bell towers," that agree in certain special features of which the most characteristic is mid-wall work in the belfry openings, but are not furnished with the regular Saxon criteria, such as l. and s. quoins, pilaster strips, double-splayed windows, or baluster shafts, on which in the previous papers reliance has chiefly been placed. Towers like Barton-on-Humber, which do exhibit these features, have been already dealt with along with the rest of the monuments. It will be convenient to give a list of all the towers in question in geographical order from south, and afterwards to comment on them, not singly, but in groups.

LINCOLNSHIRE.

In the south part of the county there is *Great Hale*, and the obviously late examples of Boothby Pagnell and Syston, which show mid-wall work. *Coleby*, *Harmston*, *Branston*, and *Bracebridge* are on or near the Cliff road as we approach Lincoln; *St. Peter-at-Gowts*, *St. Mary-le-Wigford*, and *St. Benedict* in Lincoln itself. North of Lincoln and west of the Ermine-street a compact group consists of *Marton*, *Great Corringham*, *Heapham*, *Springthorpe*, *Harpswell*, and *Glentworth*.

On the wolds to east, between Market Rasen and Grimsby, there may be counted *Hainton*, *Rothwell*, *Nettleton*, *Cabourn*, *Swallow*, *Scartho*, *Clee*, *Holton-le-Clay*, and *Waith*. Grainsby is not one of the class, while *Worlaby*, *Winterton*, and *Alkborough* are to be found in the northernmost section of the county.

YORKSHIRE.

[Maltby near Rotherham, Leathley by Otley, Weaverthorpe, Kirkby Grindalythe and Stonegrave on the wolds, are early, but have no pre-Conquest signs. The characteristic mid-wall work, however, occurs at *Monk Fryston*, between Selby and Leeds, and also at Hornby, near Bedale, as well as in the following from the wolds:—*Wharram-le-Street*, *Appleton-le-Street*.

DURHAM.

This county furnishes the towers of *Billingham* and *Monkwearmouth*, while Jarrow, though not Saxon, must be referred to for comparison.

NORTHUMBERLAND.

This county, besides the already mentioned Corbridge and Whittingham, contributes well-marked examples. In the Tyne Valley are *Ovingham*, *Bywell St. Andrew*, *Warden*, and further north *Bolam*.

This gives us about forty examples of square west towers, thirty of which exhibit mid-wall work in the belfry openings, while the belfry stage in the others* is later, but was almost certainly treated originally in the same manner. They have *ex hypothesi* no other feature which is in itself a convincing proof of pre-Conquest origin, though the strip work that surrounds the belfry openings at Wharram-le-Street, Billingham, Monkwearmouth, Bywell, and Ovingham, might be reasonably claimed as such a feature. They show a native and non-Norman character (1) in being unbuttressed (Hornby is the one exception); (2) in their tall and slender proportions (this is by no means

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* Hutchinson, "History of Durham, 1787," ii. 475.

* Viz., Cabourn, Coleby, Hainton, Halton-le-Clay, Nettleton, Springthorpe, Swallow, Worlaby, Warden.

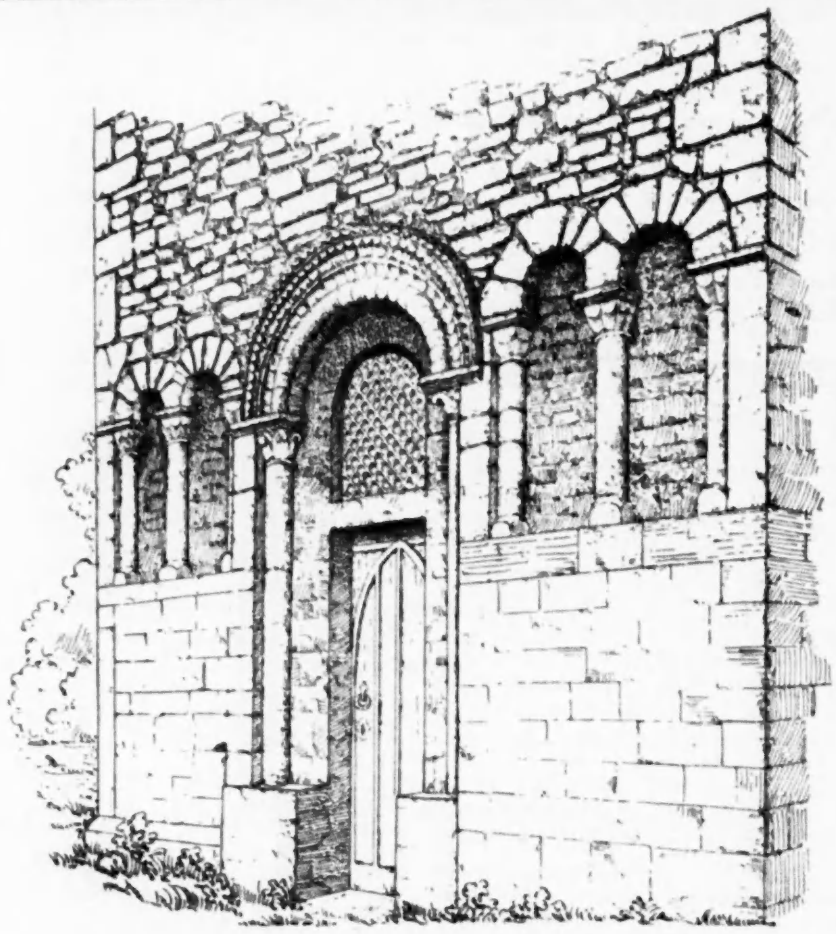

Fig. 29.—Arcading in Lower Stage of Tower, Branston, Lincolnshire.

universal, for some examples of the class, such as Harpswell, are of very sturdy build); (3) in some remarkably plain but well-constructed west doors, of which fig. 27 gives a good specimen;* (4) in occasional loops of a curious keyhole form, which does not seem to have been noticed on the Continent† (fig. 28); (5) in the cubical caps of the belfry openings, for which see *Builder*, August 6, 1898. On the other hand, there are distinctly Norman or even later features in the clasping corner buttresses at Hornby, the west door at Boothby Pagnell, and the mouldings in the belfry openings at Syston, while diagonal tooling in the Norman form occurs at Alkborough, Clee, and elsewhere, and the herring-bone masonry at Marton is very Norman in character. Branston has arcading of Norman character on the exterior of the ground story (fig. 29). Neutral features, such as plain tower arches with chamfered imposts and internally splayed loops, are common, and with these may be noted the absence from the quions of l. and s. work. No one of the two score examples now under consideration exhibits l. and s. quoins, though these are sometimes to be found on the adjacent west corners of the nave, as at St. Peter-at-Gowts, Bracebridge, and Rothwell. The towers vary in the presence or absence of plinths, sets-off, and horizontal string-courses. Great Hale is about the only one that is absolutely plain, and this example is also unique in the possession of a narrow turret stair in the thickness of the wall at the north-east corner. The upper stages of all the rest are only reached by ladders, and nearly every one has a door-like opening to the church above the tower arch. No one has, or rather had originally, a vaulted lower stage save Monkwearmouth, and here the vault belongs to the earlier porch, not to the tower superimposed upon it. No one seems to have retained its summit unaltered, but, as a rule, save where there is a later spire, they end flat with more or less modern battlements. On the question of the original termination the following may be noted. None of the forty show signs now of any other kind of ending than the flat one with which they have actually come down to us. A comparison with other examples not in this special class contributes some relevant facts. St. Benet's, Cambridge, the l. and s. quoins of which go right up to the summit, looks as if it always ended with its present flat top. Sompting has the German "Helm." Corbridge, according to Mr. Hodges, had its east and west walls surmounted by gables.* Some early Norman towers in the Duchy ended flat (Lion-sur-Mer, Luc-sur-Mer), others with a pyramidal cap (Ver, Thaon) and such a cap exists in the Norman towers at Penmon and Priestholme, in Anglesea, in the latter instance certainly original like that at Thaon. The examples vary in the presence or absence of a west door, but this exists in fully half the total number, and, though the lower windows are generally mere loops, there is no sign that any of the towers were built or used for purposes of defence.

Putting together these facts about this interesting class of pre-Conquest monuments, we may conclude as follows. The type is certainly Saxon, for the special characteristic of mid-wall work occurs elsewhere in connexion with other pre-Conquest features. There is nothing inconsistent with pre-Conquest origin in the occurrence of recessing or angle shafts or diagonal tooling in the west doors or tower arches, for the west door of about 1060 at Kirkdale shows all these features. On the other hand, three or four examples already noticed are certainly post-Conquest, and some of the others, such as Marton, Harpswell, and Appleton-le-Street, look late in technique or detail. It is clear that they represent a native building tradition that survived the Conquest, and this gives them one of their special claims to attention. Though St. Peter-at-Gowts and St. Mary-le-Wigford, at Lincoln, may not be Colswegen's towers, it is clear that Colswegen's contemporaries and successors would be carrying on this traditional work even under Norman lords. When and under what circumstances the type originated is another question.

The occurrence of these towers in such large numbers in the north-east counties that received the bulk of the Danish incomers in the ninth and tenth centuries makes it natural to surmise some connexion between them and this epoch of our history, and it has been sought to find in them parallels to the Irish round towers, which were places of defence and refuge in the days of Viking inroads. It has been shown already, however, that the defensive character so marked in Ireland is entirely absent from these towers, in which, on the other hand, we see marked emphasis laid upon the belfry stage, so that, as we have them, they are emphatically bell towers. All the architectural features about them point, moreover, to a date for their erection as late as the first half and middle of the eleventh century. It is conceivable, however, that the existing examples represent a survival of a tradition of tower-building which really began with towers of refuge like the Irish. The existing Irish examples seem themselves to belong to the second generation, so to say, of such structures, as their technique is, as a rule, somewhat advanced. In the same way the familiar Lincolnshire bell-tower may represent ruder structures that actually belonged to the Viking age.

* Doorways of this type, to which a certain Doric massiveness and simplicity lend marked character, occur at Heapham and Springthorpe and at Cabourn, Swallow, Rothwell, Scartho, and Clee—all in the country between Gainsborough and Grimsby. Elsewhere they do not appear.]

† Save in these towers (all of which are in the north division of Lincolnshire) the key-hole opening seems only to be found at Langford, Oxon.

* *The Reliquary*, January, 1893, p. 14. Such gables have been given to the conjectured early form of Barton-on-Humber, in fig. 25, *ante*.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS:

EXCAVATIONS IN THE FORUM AT ROME.

A MEETING of the Royal Institute of British Architects was held on Monday evening at 9, Conduit-street, Mr. William Emerson, the President, in the chair.

The minutes having been taken as read,

Professor Lanciani gave a lecture upon the "Architectural Results of the Latest Excavations in the Forum at Rome." He explained that the remarkable success of these excavations in a district which had been so often searched and laid bare was due to the fact that former excavations had always stopped at the higher level of ruins. As soon as the pavement of a street, house, or public building had been exposed to view they were asked to stop without being able to ascertain whether under those structures of the late Empire there were deeper and older strata of even greater archæological interest. As it was known that the Roman Forum and the region of the Via Sacra had been swept by fire and rebuilt at least four times under the Empire, it was at last determined to probe that sacred piece of ground down to the level of the virgin soil wherever it was possible to do it without injury to the higher and later structures. The results surpassed their most sanguine expectations, especially from the archæological and historical point of view. The architectural discoveries, too, though modest, nevertheless merited special notice. By means of a series of photographic lantern slides the lecturer conducted his hearers over the Forum and the Via Sacra, starting from the Comitium, and directing attention to and discussing the various objects of interest the excavations had brought to light. Nearly two years had elapsed since the finding of the monument which they had identified as the Heroon, or empty grave of Romulus. The controversy about the nature, date, and object of the monument had been decided in their favour, and it was now admitted that this was really the identical monument raised in honour and in memory of Romulus at the time when Rome was still ruled by the kings. The deification of Romulus was not a late Greek fable, as some recent critics contend, but a fact proved conclusively by these recent discoveries. The Heroon is or was composed of six parts or elements—namely (*a*) the Cœnotaph or empty grave, (*b*) the two lions which guarded it on either side, (*c*) the pillar of honour, (*d*) the stone inscribed with the *lex loci*, (*e*) the altar, (*f*) the sacrificial stone. The whole group was found embedded in layers of sacrificial remains such as charred bones of victims, small vases, clay discs representing cakes, figurines of bronze, bone, or clay representing men and women in the stiffness of death, and as it lies at a considerable depth under the level of the Imperial Comitium, so its site was indicated by a square enclosure surrounded by a marble transenna and paved with black stone, the famous "lapis niger" of Festus and Varro. The Cenotaph was found filled up with earth and decomposed organic remains, without any trace of a cinerarium or ossarium. This is in perfect accordance with the Roman tradition, and the popular belief in the fate of Romulus. The abundance of organic matter in the earth

which filled the grave was due to the practice common in those times of slaying the victims so that their blood might flow inside and give joy and satisfaction to the spirit of the hero and appease his wrath. The mysterious and irresistible power of the same spirit was symbolised by one or two lions. The interest of this chain of discoveries culminated in the inscribed stele or pyramid still standing after twenty-six centuries in the identical site in which it was set up at the time of King Numa or King Servius. The inscription engraved on this rough block of tufa has been given the place of honour among the 95,000 epigraphic documents which have been collected all through the Roman Empire for the *Corpus inscriptionum*. It precedes by a couple of centuries what was considered up to the date of its discovery the very oldest specimen of the Latin language and Latin palæography, the so-called cup of Dvenos, now in the Berlin Museum. Mutilated as it is, and containing some 60 per cent. of words hitherto unknown, an interpretation of the inscription is at present impossible, but judging from the signification of the words which have passed into the Latin tongue, the stele must have contained regulations issued by the king-high-priest in connexion with hero-worship at the grave of Romulus. Continuing along the Via Sacra, Professor Lanciani referred to the results of the geological exploration of the ground, showing how the primitive path, which was irregular and winding, had gradually been transformed, until, as buildings were erected on either side, it took a definite shape and was made to turn four or five times at right-angles. Coming to the newly-discovered monument, the Basilica Æmilia, the lecturer said they had learned by experience the possibility of this extraordinary fact—that a building of the first magnitude like the Basilica Æmilia, proclaimed by classic writers the finest of its class in the world, could have been excavated to the very root of the foundations, deprived of its hundred columns, that tens of thousands of feet of its gracefully-carved marbles could have been burnt into lime or turned into new shapes and purposes, without a single record being left of the titanic deed of destruction. Having briefly sketched the history of the place, the lecturer said that they had now learned that the building must have been gutted and wrecked in the great fire of 283 under the Emperor Carinus; and that it was hastily and disgracefully restored by the Emperor Diocletian in the clumsy style which characterised the patchwork of the Decadence. They had also learned that whatever parts were left standing of the Basilica at the end of the fourth century were pulled down to make use of the materials for the building of the Church of St. Paul on the road to Ostia. The lecturer added, by way of consolation, that by tracing the lines of the foundation walls and by sorting the fragments of its architectural decorations, they had been able to reconstruct the original design in plan as well as in elevation. A drawing of the restoration, the work of Signor Giuseppe Gatteschi, was shown by the lantern. The Temple of Antoninus and Faustina, the next building reached, had been freed by their latest operations from its ignoble surroundings, and also restored to its original height and to its original perspective point of view. The pavement of the Via Sacra which runs in front of the Pronaos is 4 ft. higher than the original one, and there were five steps of the original stairs buried under the mediæval pavement. These steps have been uncovered, and the temple now appears in all the noble proportions of its original design. Discussing the Regia and its remains, the lecturer dealt particularly with two interesting relics of the building—viz., the circular structure in the inner hall, and the storepit or underground tholos. The former is suggested to be part of the sanctuary in which the spears of Mars were kept, while the storepit and the altar have been identified with the *Ops Consivia*, whose presence and worship in the Regia are attested by historians of early Rome. The spears of the Regia were venerated as the weapons of Mars. They were wooden rods with metal points, and two have actually been found in the present excavations. The chapel in which they were kept was a genuine seismographic observatory, where earthquakes were observed and registered. Leaving the Regia, the lecturer next drew attention to the House of the Vestals, relating incidents in its history and particulars about its architecture lately ascertained. Entering the cloisters of the Vestals, the first monument met with is the pedestal of Claudia, the first and the only princess of Vesta who gave up her exalted position to embrace the Christian faith. Across the Via Nova one enters the newly-excavated colossal temple of the deified Roman emperors. Architects will find the temple a new and unexpected subject for study, so different are the plan and elevation of the building from any known design of a Roman public building, and so wonderful is its preservation. The building does not stand isolated on its own ground but is connected with the Palace of Caligula and with the state stairs that descend to it down to the level of the Forum. It was already known from the discovery of other such stairs in the Palace that the Imperial architects—possibly the Emperors themselves—objected to steps, and that whenever the plan of the building allowed it, they substituted for steps inclined planes, with an easy gradient of six or seven in a hundred, interrupted by horizontal landings. The newly-discovered descent from the Palace of Caligula to the Temple of the Emperors is designed in the same way. Lastly, the lecturer described the Imperial warehouses for Indian goods, brought to light in the excavations. This establishment, officially styled the "Horrea Piperataria," was built by the Emperor Domitian, about 84 A.D., for the storage of the spices named and described by Pliny in the twelfth book of his "Natural History." The warehouses were wrecked and gutted in the fire which destroyed the whole quarter of the Via Sacra in 191 A.D., a few weeks before the death of Commodus. Considering the happy results of the excavations, the lecturer said their thanks were due to the Italian Administration of the Antiquities, and to their colleague, Commendatore Boni, for the scheme so cleverly planned and so skilfully carried through, and for their decision not to stop any more in the search at the level of the classic buildings of the Empire, but to reach, wherever possible, the lowest and deepest strata, contemporary or even anterior to the foundation of Rome. By following this scheme he felt confident they would ascertain the true origin of Rome, and the nationality and stage of civilisation of its original settlers.

Mr. F. C. Penrose moved a vote of thanks to the lecturer for his admirable and deeply-interesting account of the recent excavations. He remembered looking at the Forum many years ago, when it was in a very different architectural condition than now. It was then more picturesque, because there are now so many objects to interest one, and the archæologists had to apologise for spoiling Nature's work. Nevertheless, they were most thankful for the new discoveries. Professor Lanciani had referred to the aggregation of soil and rubbish in the Roman Forum, and they could all appreciate his point, because they knew how Roman London had been built upon. His remarks about the tomb of Romulus were also deeply interesting, and the discoveries had taken them back to a much earlier date. It was gratifying to know that the recent excavations had not done any harm to the interesting buildings of the classical time which had already been brought to light.

Sir Lawrence Alma-Tadema, in seconding the vote, said Professor Lanciani had stimulated him in his work more than any other man. In his lecture he seemed to have taken them by the hand and conducted them over the Forum and lingered at the tomb of Romulus and the House of the Vestals.

Sir William Richmond supported the vote, and remarked that whenever we found comradeship with an Italian we felt that we were a common brotherhood with them. Italy was a great nation, and if she did not run consecutively with the great ages of Greece she took up from Greece all that was beautiful and transmitted it over Europe and to our barbaric Isles. We Englishmen were desirous of harking back to these great classic ages of purity of thought, purity of design, and purity of construction, and the Professor had stimulated them. He had written a kind of epitome of the ancient history of Rome and had told them that Romulus was not a mythical person. It had been the fashion of late years to attempt to destroy all ancient myths and to say that so-and-so never existed and was only an idea. They were very grateful to the modern scholars who went back to these ancient beginners of history and told them that they were not myths but men.

Professor Aitchison, R.A., after congratulating the lecturer, said there was some mystery yet to be solved as to the way in which Greek architecture was transformed into Roman. It had been suggested that excavations and researches in the Isle of Sicily might show some of the steps by which this had been accomplished, and he trusted that the mystery would soon be solved by some of the indefatigable antiquarians and archæologists of the present day.

Dr. A. Murray said that in listening to the lecture he had felt that he was on a visit to Rome. During the past twenty-five years no Roman, at all events, had done so much for archæology as Professor Lanciani.

The Chairman mentioned that the lecturer had been carrying out researches in Rome since 1871. This year he received the Queen's gold medal—the last time an Italian received this honour, who was the only one, was fifty-one years ago. He had been struck by the Professor's remarks about the collection of *débris*. When he was in Rome he noticed every day streams of carts come into Rome from Campagna laden with earth for building purposes, and he had been assured by a native that this had been going on from time immemorial. No doubt this would account to some extent for the depth at which they found the lower strata.

The vote having been carried,

Professor Lanciani said that England preceded all other nations by a hundred years in her appreciation of Rome. He had found in this country far more important documents relating to the Roman Forum than in any other land; in one library alone he had found 2,727 beautiful water-colour drawings, and he had also found many gems in private houses. He was glad to say that a movement was now on foot to provide an English college in Rome for the benefit of archæological students. In this respect England had heretofore been behind other nations, but he hoped before long that the college would be an accomplished fact.

Mr. F. C. Penrose said it was quite true that this British school was in course of formation, and very soon there would be a considerable movement in its favour.

Professor Aitchison asked the lecturer to convey to his fellow-countrymen the goodwill and best wishes of the Englishmen assembled at this meeting. We owed much to Italy; she started to give us the whole of the classics, most of which would otherwise have been lost, and to architecture and archæology she had rendered great service.

This concluded the proceedings.

THE ARCHITECTURAL ASSOCIATION.

An ordinary fortnightly meeting of this Association was held on Friday evening last week in the Meeting Room of the Royal Institute of British Architects, No 9, Conduit-street, Regent's-street, Mr. W. H. Seth-Smith, President, in the chair.

The minutes of the previous meeting having been read and confirmed, the following gentlemen were elected Members of the Association:—Messrs. P. J. Bartlett, R. M. E. Carey, C. M. Childs, W. L. Clarke, H. A. Coldman, P. M. B. Collcutt, F. J. Cox, R. T. Congreve, W. S. Dakers, J. W. H. Farrow, S. T. Hennell, R. M. F. Huddart, W. C. Lemaitre, A. C. Mac George, R. H. Nicol, C. E. Power, E. T. L. Smith, and F. Worrow.

Mr. R. S. Balfour, Hon. Sec., announced that the next meeting of the Discussion Section would be held on the 16th inst., when a debate would take place on the subject of "Party Walls."

The late Mr. William Young.

The President said that although the late Mr. Young was not a member of the Association, yet he took the warmest interest in it, and consequently it was with much regret that he had to announce the death of Mr. Young. Mr. Young was in the zenith of his fame, and had achieved a very high distinction in being elected to carry out such a building as the War Office. All who had seen Mr. Young's design for that building must have felt what an able design it was, and how well it justified the appointment made by the Government. He thought it would be in accord with the wishes of the members that a vote of condolence be sent to the family in their bereavement.

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The motion was agreed to in silence.

The Legal Position of the Architect.

The President said that Mr. L. L. Macassey, who was to have read a paper before them that evening on the subject of "The Legal Position of the Architect," was too unwell to do so, but Mr. Macassey's son, who had assisted in the compilation of the paper, had kindly come there that evening for the purpose of reading it.

Mr. Lynden L. Macassey, B.A., LL.D., then read the following paper :—

"There are few professions for which more varied qualifications are required than that before some of whose leading members I have the privilege of reading this paper, for the capacities in which an architect requires to act are numerous and carry responsibility. At times he is called on not only to advise his client on matters of architectural moment, but often compelled to be a quasi legal adviser and constantly obliged to assume the role of arbitrator between his employer and those engaged in carrying out his designs. In each capacity the law invests his actions with different legal consequences with which every architect should be acquainted. Members of the profession are presumed, in the eyes of the law, to be thoroughly versed in all matters requisite for properly advising their clients. 'The public profession of an art,' said Mr. Justice Willes, in Harmer *v.* Cornelius, 28 L.J.C.P. 85, 'is a representation and undertaking to all the world that the professor possesses the requisite ability and skill.' Indeed, the great principle of English law applicable to all such professions is that the architect must display reasonable skill and care, and if his employer suffer damage by reason of his failure so to do, for it the architect will be held responsible. In determining the precise liability of architects for their actions under certain circumstances, the real difficulty is properly to apply this principle. There are in reality but few decisions bearing directly on the liability of architects, for the honour of the profession has been singularly well maintained. But such as there are I shall mention, and in addition point out the legal relations that exist at different times during the execution of a contract between the architect on the one hand, and the employer and the contractor on the other. The knowledge thereof is essential to every architect. It is, indeed, a part of the reasonable care and skill he is obliged to possess. Without it he cannot fail to put himself and his employer in many injurious positions.

Now the employment of an architect may be divided under two main heads : his employment as a skilled adviser to his client, and his employment during the execution of works as an agent of the client. Both branches of service come under the function of contract.

As a skilled adviser the architect may be employed to give evidence, to make valuations of property, to act as arbitrator, and to prepare designs for intended buildings, and the latter is most frequently the form his employment takes. When, however, the buildings come to be erected, a contractor is generally called in, and as between the building owner and the contractor the architect acts as agent.

In dealing with the duties of the architect, reference must first be made to the retainer, for often the validity of his agency depends on his being properly retained. In most transactions between employer and architect a valid contract can generally be implied from the course of business letters between the parties, and if no terms are arranged the architect will be entitled to reasonable remuneration. It is always best, however, to have the conditions of service and the terms of payment settled before the work begins, and so avoid misunderstandings. A short letter from the architect reciting the terms will do, for even though not acknowledged, the employer is legally bound if he acquiesces and allows the work to go on.

When, however, the employment will last for a year, the agreement should be in writing and signed by the employer (21 Car. II., c. 3, s. 4), the provision made by the Statute of Frauds. But the mere fact that the employment has extended beyond a year will not of itself bring the case within the statute. In fact, to make the Act apply, it must appear from the terms and subject matter of the agreement that the employment will not be completed within the year (Peter *v.* Compton, Skin 353), and it should also be noted that an agent of the employer, if duly authorised, may sign for him.

In cases where an architect is employed by a corporation, his retainer must be of a more formal character than when a private individual is the employer. As a general rule, contracts with corporations are only binding when under seal. Thus it has been held that a medical officer employed by a Board of Guardians must be appointed under seal (Dyte *v.* St. Pancras Board of Guardians, 27 L.T. 342).

But a contract not under seal may be binding upon a corporation in certain cases, that is, if it is with respect to matters necessary or incidental to the functions or business which the corporation has been created to carry on. What these matters are it is somewhat difficult at times to decide. In Nicholson *v.* Bradfield Guardians (L.R. 1, Q.B. 620), it was held that a dealer who supplied coal to the workhouse under an agreement not under seal was entitled to recover the price. Probably thus an architect retained to do repairs would not require to be retained under seal by a corporation, but if to construct new buildings and works he would.

As regards contracts with local and sanitary authorities, reference must be made to Section 174 of the Public Health Act, 1875, which enacts as follows (38 & 39 Vic., c. 55, s. 174, s.s. 1) :—'Every contract made with an urban authority whereof the value or amount exceeds 50*l.* shall be in writing and sealed with the common seal of such authority.' The decision in Hunt *v.* Wimbledon Local Board turned on this point (3 C.P.D. 208, 4 C.P.D. 48). The plaintiff had been employed by the Board's Surveyor under their express authority to prepare plans for new offices for the Board. When the tenders came in, however, it was found the lowest considerably exceeded the estimate. The scheme fell through, and on the plaintiff suing for his fees for the preparation of his plans the jury found that the offices were necessary for the purposes of the Board, and that the plans were necessary for the erection of their offices. But it was held by the Court that Sub-Section 1 of Section 174 of the Public Health Act, 1875, was mandatory, and *as the amount was over 50l.* and the contract not under seal, the plaintiff could not recover.

But in Younge & Co. *v.* Mayor, &c., of Royal Leamington Spa (8 App. Cas. 517), the defendants' engineer, with their approval and consent, called in the plaintiffs under the specification to finish up a contract abandoned by a former contractor. The work was completed and the defendant board got the benefit of it, but the plaintiffs failed to recover, as there was no contract under seal.

But Section 174 does not apply unless it is apparent at the outset that the amount of the work or the value of the services rendered will exceed 50*l.* Thus, in Eaton *v.* Basker (7 Q.B.D. 529) a medical man agreed verbally with a Sanitary Authority to attend fever patients in tents at 5s. 3d. per tent per day. His bill ran up to 100*l.* It was held that he was entitled to recover, as the contract was not one exceeding 50*l.* and requiring a sealed agreement within the meaning of the Act, as at the time it was entered into the parties had not ascertained it would exceed that amount.

What, then, do these cases show us? Firstly, this, that an architect, to be a properly authorised agent, should not accept a retainer to prepare plans for a Corporation or Local Authority unless under their common seal, if in the latter case his percentage or fees exceed 50*l.* He may find it impossible to sue for his fees, and in the carrying out of the works he may, as the agent of the Corporation or Local Authority, have perfectly *bonâ fide* made arrangements with builders and contractors which, however, his employers are in a position to repudiate, placing him in the undeserved position of having, in the eyes of the law, acted as an agent without authority, and rendering himself liable to the builders or contractors.

Even at common law, apart from the Public Health Act, the Corporations or Local Authorities might disclaim all contracts, however small, he had made on their behalf, and an agent, though honestly acting in a believed authority, is liable under the rule in Collen *v.* Wright (8 E. & B. 647) and Firbanks Exors. *v.* Humphreys (18 Q.B.D. (C.A.) 62), which renders him personally liable An architect may, however, if retained to advise at day fees, recover his fees against a Local Authority under Eaton *v.* Basker, although they do exceed 50*l.*

The architect to a Local Authority, if he be a permanent official, may, however, be lawfully appointed under Section 189 of the Public Health Act by resolution entered on the minutes, as in Smith *v.* Hirst, 23 L.T. 665, and in such a way appointed may act as the Local Authority's agent without fear of consequences.

So an architect may be validly appointed or merely temporarily retained by School Boards acting under the Elementary Education Act, 1870, Section 35, and Rule 7, Schedule III., by a minute of the Board, countersigned by the chairman and by the clerk (Scott *v.* Great and Little Clifton School Board, 14 Q.B.D., 500).

It will be remembered that at the outset I pointed out that the architect who holds himself out for and accepts employment must possess and bring to bear upon the discharge of his duties a reasonable amount of skill and care. But the obligation does not apply alone to architects. Solicitors, doctors, dentists, and many other persons engaged in professional and technical matters are subject to the same liability. The question then arises, what is a reasonable amount of skill which must be possessed by an architect? and the answer to this is not very satisfactory. No general rule can be laid down. The circumstances of each case must be taken into consideration. It is not enough to act to the best of one's skill and ability, one must act in a skilful manner (Jones *v.* Bird, 5 B. and A., 845). What would be a skilful manner under the particular circumstances seems to involve much greater knowledge and ability to-day than it did fifty years ago. The law considers the advance of science and human requirements. But before going into details, let me mention one exception. If an employer accepts the services of an architect to carry out certain work, and knows that the architect has had but limited experience and training, he does so at his own risk. And if by reason of the inexperience of the architect damage occurs, the employer cannot, in the absence of negligence, hold the architect liable therefor When, however, the fact of an architect's incompetence for the work becomes known to his employers, they are justified in dispensing with his services before the expiration of his engagement (Harmer *v.* Cornelius, 28 L.J.C.P., 85).

As the first illustration of absence of reasonable care and skill, one may deal with the introduction into a design of some novel invention, the success of which has never been tried, or the undertaking, in the first instance, of work of a very doubtful result. In the case of the doctor or solicitor there is no implied warranty as to results. The doctor may do his best and the patient may die, the solicitor may take every needful step and yet lose his case. But these contingencies do not come to the aid of the architect ; he is bound to avoid experiment at the expense of his clients, and unless he sees his way to a successful result the work should not go on. In Duncan *v.* Blundell, 3 Stark 6, 5 M. & P., 548, Mr. Justice Bayley said :—'A professional man should not undertake work when he does not know whether he can succeed or not.' The law, however, is very indefinite as to what length an architect may go in doubtful work. Direct authorities are wanting, but reasoning from analogous decisions discloses the principle that to be free from liability he should acquaint his employer fully with the hazardous nature of the work and obtain his consent thereto, and satisfy himself, after investigation, that with the adoption of proper methods the work may be carried out successfully. In an old case of Slater *v.* Baker and Stapleton, 2 Wilson, 359, where surgeons had used a new instrument for operating with disastrous results, the Court said 'this was the first experiment made with this new instrument, and if it was it was a rash action,' and allowed the action. But in case of an action against an architect in respect of unsuccessful work, it would appear from Chapman *v.* Walton (10 Bing, 63) that the fact that he took the steps that all architects in his position would have taken will be a good defence. A clear distinction should be drawn between mistakes in policy on the part of the employer, and incompetent procedure on the part of the architect. A wooden building like a Norwegian hotel is much cheaper than a stone erection ; if the architect builds it of wood according to instructions and of proper dimensions he is not answerable if it does not stand the weather.

As sometimes happens, the employer is dissatisfied after the completion of the work with the result of the design, and tries to throw responsibility on the architect. What is the position of the architect? With respect to all matters of policy on which the client is com-

petent to form an opinion, as, for example, the arrangement of particular rooms in a house, and of which he has approved, he is estopped from turning round afterwards upon the architect and charging him with want of skill. But the employer is not deemed to be competent to determine minute matters of detail, such, for instance, whether or not particular members are of proper scantling. Should girders break or walls crack, from causes that the architect ought to have foreseen, the latter will be liable for want of reasonable skill.

The position of the architect in respect of plans prepared by him is of special importance, and how he is affected by any errors or insufficiencies either in them or the specification. The case of Thorn *v.* The Lord Mayor of London, 1 App., Cas. 120, may be regarded as the leading authority. There the facts were these:—The plaintiff had contracted with the Corporation of London to build a bridge across the Thames according to the plans of the City Engineer. Certain caissons for the pier foundation were included in the work and these the contractor found he could not construct according to the plans and specification. Another method with the consent of the Engineer had to be adopted and the contractor sued for the extra expenditure he had incurred. It was held, however, that he could not succeed, as there was no warranty on the part of the defendants that the works as proposed were capable of being carried into execution. The usual clauses were in the specification. It will thus be seen that under ordinary plans and specifications, architects as against contractors cannot be made liable for their insufficiency. So that if a contractor undertakes to do a thing that is impossible at the outset, he may refuse to carry out the contract on the ground of impossibility of performance according to the decided cases, yet were he has once entered on and completed the work, he cannot claim in respect of any extra expense occasioned by the work being impossible or impracticable.

The liability of the architect towards his employer for defective drawings is, of course, different, and we must distinguish defective drawings by reason of the work being infeasible, and defective drawings prepared in a careless manner. An architect, in the absence of special agreement, is bound to make sufficient preliminary investigation to satisfy himself that his proposals are practicable. Thus, in the case of Moneypenny *v.* Hartland, 2 C. & P., 378, the plaintiff had been employed to prepare an estimate and other particulars for a committee proposing to erect a bridge. He relied on the borings that had been taken by a surveyor previously employed by the committee, which turned out incorrect. The estimates were exceeded in consequence, and the plaintiff, when he sued for his fees, failed to recover. It is rather difficult to say whether the committee would have succeeded in an action against the architect. Could they have shown appreciable damage, I am inclined to think they could for his neglect of ordinary skill and care.

In respect of defects in the drawings arising out of careless preparation, it would probably only be when the employer had been put to extra expense thereby that he would take proceedings against an architect. This, as we have seen, is not likely to happen. But if it should, the architect is undoubtedly liable for want of skill and care.

As against the public few cases have occurred in which architects have been held liable for failure of their designs. A case is Mosdell *v.* Mitchell and others (*Times*, January 20, 1891), in which the widow of a workman brought an action under Lord Campbell's Act against a building owner, his contractor, and architect, for the loss of her husband, who was killed by the walls of a house falling upon him, which walls were too light to bear the strain. The house had been designed by the defendant architect for the defendant builder. During the hearing the jury, on the suggestion of the judge, stopped the case against the building owner, and gave a verdict for 500*l.* against the builder and architect jointly.

As illustrative of the care that the law exacts from an architect in his capacity of skilful adviser, one may mention the case of Crabb and others *v.* Brinsley (5 T.L.R. 14), in which the defendant had been retained to advise on the character and condition of certain houses in Holborn proposed as security for a mortgage. The defendant reported that the houses were good security. The plaintiffs made an advance of 1,500*l.*, but the premises were afterwards sold for 410*l.* There were two actions, and in the second action the plaintiffs recovered the full amount of their advance, viz., 1,500*l.*, as against the defendants.

There are many other cases of like character, which might be referred to, but they disclose nothing new in the legal position of the architect as a skilful adviser of his employer. The facts vary in each case; but the law appears well settled that the architect must bring to the discharge of his duty a reasonable amount of skill and care.

We may now assume that the architect has completed his drawings and specifications for some intended work, and that the building owner has approved of the documents and is desirous of obtaining tenders. The architect, as a rule, is called upon to investigate the character of the different tenders submitted, and his duty is to advise impartially. In a case of Miller *v.* Wilson, reported in the *Building News* of August 6, 1886, the plaintiff, a building owner, sued an architect for advising him to accept a particular tender under which alterations to his house were carried out, and which were the highest of those sent in. After a great deal of conflicting evidence on both sides, eventually the jury found for the defendant architect. Plainly, an architect's duty is to advise which of the firms who have tendered are most likely to do the work the cheapest, but in the most satisfactory manner, and bring it to a satisfactory conclusion.

With the acceptance of a tender by the employer, and the entering into a contract, the architect enters upon a wider sphere of duty in acting as his employer's agent. His duty, then, is faithfully to carry out the work according to the plans and specifications, and to exercise a competent supervision to ensure satisfactory workmanship and materials being obtained.

An architect during the construction of the works has not authority to deviate from plans or specification in the slightest without his employers' consent. When no express authority is given, an architect can only bind his employers in respect of acts done or orders given in the general course of his employment, and these are confined to such as are absolutely necessary for carrying out the work. The authority of the architect is really of very limited extent. In the words of Chief Baron Alexander in Rex *v.* Peto, the 1 Y. and J. 37, he is a 'person who ought to be in general, but an onlooker of the owner to see that the work is accurately performed.' Cooper *v.* Langdon (9 M.W. 60), is an instructive case. There, according to the drawings and specifications, a certain wall was to be of brick for which stone was substituted by the builder. The building owner took action for breach of contract and succeeded. The defendants claimed that he made the alteration at the instigation of the architect, but there was no authority shown on the part of the architect to bind his employer in respect of any deviations from the drawings.

The authority to make alterations or additions is usually conferred by the building contract, when it is conferred at all, and the architect must keep strictly within its terms. Thus in Rex *v.* Peto (quoted above) the architect had the power to order 'additions or omissions.' The work consisted in building a custom house with piled foundations. The architect had the house built without piled foundations, and it was held that this was not an omission, but, in reality, a variation which was not in the power of the architect to order.

A matter of great importance is the question of quantities, and on this a few observations may be offered. It is extremely doubtful whether an architect is allowed to retain a quantity surveyor without express authority from his employer. Much depends on the terms of the architect's retainer. Thus, in Waghorne *v.* Wimbledon Local Board (*Times*, June 4, 1877), the defendant board instructed their surveyor to prepare plans and specifications and procure tenders for the erection of a mortuary chapel. The surveyor instructed the plaintiff to take out the quantities. He did so and sent in his bill in the ordinary way. The board refused to pay, but the Court held that, as the board had instructed their surveyor to procure tenders, and as tenders could not have been submitted without bills of quantities, there was implied authority to the architect to retain a quantity surveyor.

Where, however, the architect is not directed to procure tenders, it is exceedingly questionable whether, apart from a distinct custom in the profession, an architect, on his own initiation, should retain a quantity surveyor; in fact, it is so doubtful, that it is much better not to do so (Moon *v.* Guardians of Witney Union, 3 Bing. N.C. 114, cf. Evans *v.* Carte, *Times*, May 28, 1882). For should the architect retain a quantity surveyor without authority, he will be personally liable for that gentleman's reasonable charges, and it matters not that he retained him in perfect good faith and convinced of his authority to do so (Collen *v.* Wright, 8 E. and B., 647). In a case, Gordon *v.* Blackburne (the *Builder*, February 1, 1879), the defendant, an architect, had requested the plaintiff to take out quantities for a building he had been instructed to prepare plans for. The quantity surveyor did so, and applied to the architect for payment, by whom he was referred to his employers. He then proceeded against the architect and recovered his fees.

The architect should not prepare the quantities himself. It is objectionable for many reasons, as the quantities are often paid for by the builder. The general law prohibits an agent from making any profit out of his agency apart from his own proper remuneration by his employers. And it is only a custom to the effect stated that would enable an architect to receive any money from the builder in respect of quantities.

In the case of inaccuracies in bills of quantities, what are the liabilities of quantity surveyor and architect? The quantity surveyor is appointed by the owner. To the owner, then, and to him alone is the quantity surveyor responsible at all. There is no privity between the quantity surveyor and the contractor, and therefore no liability to the contractor, apart from fraudulent misrepresentation, although, as was held in North *v.* Bassett (1 Q.B. 333), there may be a reasonable and good custom that the builder should pay the quantity surveyor's charges.

Whether the architect or a quantity surveyor takes out the quantities, it is to their employer that they will be liable, and to him only, for negligence and want of care. But as the judge remarked in Priestly *v.* Stone (4 *Times* L.R. 730), quantity surveyors are not liable apart from negligence. What they do is to submit their quantities as the result of their calculations, and to the best of their belief correct. There is the obligation on the builder taking those quantities to satisfy himself of their accuracy.

The two principles of law governing the liability of architects, viz., the application of reasonable skill and care, and their keeping within the limits of their authority as agents, must now be applied more immediately to their conduct during the execution of works.

At such a time an architect's duty is to exercise a proper supervision, so that the employer gets as good a building as he bargained for. In Ellisen *v.* Lawrie (*Times*, February 19, 1878), owing to the improper attention given by an architect to the laying and jointing of sewer pipes in connection with a dwelling-house, foul gases penetrated into the residence, causing illness in the family. The plaintiff, the owner, sued the architect for the cost of repairs and for medical expenses, and succeeded in his action. Of course, the question of what constitutes proper supervision must be left to the discretion of the architect who knows the character of the work, and more especially the character of the contractor engaged upon its execution.

The liability of the architect in respect of alterations and omissions has already been dealt with. It should be mentioned that he has no authority of himself to call in a quantity surveyor, as is often done, to measure up deviations and extras. That was the course adopted in Plimsaul *v.* Lord Kilmorey (1 T.L.R., 48) by the architect in respect of building operations at St. James's Theatre. It was held that he had no right to do so, and that even if there was a custom for the architect to employ a quantity surveyor it could not reasonably apply to the measuring up of extras.

Dealing with the question of extras—a most trying one often to architects—most specifications provide that extra work shall only be executed on being ordered in writing by the employer or the architect. No definition exists of what constitutes extras, though many have been suggested, and the builder may refuse to carry out certain items of work, claiming them as extras, unless on written authority, items which the architect may consider within the contract. But an order in writing may be

given under protest and will not be construed as against the architect or the employer as admitting the contractor's contention. The position of the architect as against the contractor is this: If the specification provides for a written order, a written order there must be before the contractor can claim payment (Thames Iron Works Company *v.* Royal Mail Steam Packet Company (13 C.B. [N.S.] 358), and if a contractor executes work with this provision without a written order, he has, if there has been no waiver of the condition, no redress against any one. But supposing the specification is silent, then the architect cannot without express authority from his employer order extra work. If he does so, and holds himself out as possessing, or acts without that necessary authority, he renders himself personally liable to the contractor in respect of the extra work so ordered (Collen *v.* Wright).

Passing on to the architect's duty in respect of measuring up, that involves the same application of reasonable care and skill. The accuracy of the work must be considered in respect to the magnitude of the job, and is altogether a question of degree. Thus in Corbett *v.* Richmond & Chandler, reported in the *Building News*, May 18, 1888, the plaintiff was an architect, and sued the defendants (his employers) for balance of his commission in respect of the erection of certain premises in Manchester. The defendants resisted on the ground of the architect's negligence in measuring up work with the result that the contractors were paid 537*l.* more than they were entitled to. The official referee to whom the Judge referred the case said, 537*l.* on 10,000*l.*, the value of the premises amounted to only ¾ per cent., and with only such a difference between the defendants' and the plaintiff's figures on such a job, it was absolute nonsense to charge an architect with negligence. He had never known a case in which negligence was charged against a professional man on such insufficient grounds. Towards the contractor the architect is not liable at all in respect of measuring up except on the ground of fraud.

Much the same state of things exists in regard to certificates. To the employer the architect is responsible for negligence in granting certificates, whether it be a progress or a final certificate; and the fact that by the terms of a building contract a final certificate is to bind both builder and employer, does not bind architect and employer. Thus, in Rogers *v.* James, (8 T.L.R. 67) the plaintiff was an architect who sought to recover a balance of fees in connexion with the supervision of some houses. The defendant (his employer) counterclaimed for negligence, in that the architect had not insisted on the builder putting in certain concrete in foundations. The architect pleaded that he had deducted the value thereof from the balance of the contract money payable to the contractor under his final certificate, and that it, under the usual clause in the specification, was binding on both employer and builder. The jury found that the plaintiff had been negligent. The Judge held, and his view was maintained by the Court of Appeal, that the clause binding employer and builder did not apply as between architect and employer.

When the issue of the architect's certificate is a condition precedent to the payment of the contractor, an architect is often perplexed to know how he stands if, from reasons of dissatisfaction with the work, he is unable honestly to grant the certificate. Is he liable to an action at the hands of the contractor? It must be remembered in connexion with this that the architect is in no way the servant of the contractor, and owes him no duty different from that which he owes to all mankind. The case of Le Lievre *v.* Gould (1 Q.B. 491), a case of action against an architect for negligence in discharging his duty. The plaintiff was a third party who had not retained or paid the architect, and, moreover, the negligence was practically admitted. But the action failed. Lord Esher's judgment contains the following sentences:—'What duty is there when there is no relation between the parties by contract? In the absence of contract an action for negligence cannot be maintained when there is no fraud.' And in Stevenson *v.* Watson (4 C.P.D., 148) the plaintiffs, certain builders, took action against the defendant architect in respect of his certificate being insufficient, alleging that he did not exercise care and skill in ascertaining the amount due to them, but not alleging fraud. It was held that the defendant in granting certificates was not liable for want of care or skill. He was only bound to give an honest decision.

So that, therefore, an architect generally is only liable to a contractor in point of fraud, whether in respect of refusal to grant certificates or delay in granting them, or approval or condemnation of materials or workmanship, and other such matters. Lord Herschel very clearly and explicitly explains in Peek *v.* Derry (14 Ap. Cas. 374) what is fraud. 'Fraud,' he says 'is proved when it is shown that a false representation has been made (1) knowingly, or (2) without belief in its truth, or (3) recklessly, careless whether it be true or false.'

If, therefore, an architect believes in the justice of his cause, let him refuse a certificate fearless of consequence, but on grounds, however, that he can stand over should the contractor proceed for a mandatory injunction to restrain the employer from keeping him out of his money.

There is an interesting case, that of Ludbrooke *v.* Barrett (46 L.J., C.P., 798), to illustrate what was held to amount to fraud on the part of the architect in refusing a certificate. The plaintiffs, being builders, had agreed to build certain buildings for one Ridgway on the condition that they should be paid on the defendant's certificate when the buildings were erected to his satisfaction. It was found that the architect had an interest in the matter, and that he had colluded fraudulently with the building-owner in refusing the certificate, and the action was allowed.

The architect has often, as was mentioned, to occupy the somewhat inconvenient position of arbitrator between the contractor and the employer. Acting as such, he is in the position of a quasi-judge, and, as such, is not liable to either the employer or the contractor for negligence or want of skill in making his award. He is, of course, personally liable for fraud, and that to all parties injured by his wrongful acts. In the Tharsis Sulphur Company *v.* Loftus (L.R. 8, C.P., 1), the defendant, an average adjuster, was retained by the plaintiffs to settle and adjust the proportion which the ship and cargo respectively were to bear losses incurred during the voyage. When he had made his award the plaintiffs, in spite of their undertaking to abide by his decision, brought an action against him alleging negligence in making his award. It was held, however, that the action would not lie, and see also Pappa *v.* Rose (L.R., 7 C.P., 32 and 525).

Architects in their professional career are frequently and inevitably made the recipients of confidential information respecting the affairs of their clients, and not infrequently at some other stage of their career find themselves in the position of opponents to their former employers. It is not easy to decide what is confidential information, but, be it what it may, the decision in Robb *v.* Green (A.C., 315) and the words of Lord Justice Smith are imperative:—'It is a necessary implication which must be grafted on a contract of service that the servant undertakes to serve his master with good faith and fidelity, and it is a breach of this condition to use during or after the period of service confidential information acquired during it adversely to the employer or for the servant's own benefit.' Plans belonging to a late employer, for instance, would be confidential, and if submitted to a new employer the Courts would issue an injunction against any architect so acting, and would compensate his late employer by damages for any injury incurred thereby. But where there is nothing confidential in the information, where it is merely a compilation of facts in every one's power to make, if possessed of the requisite ability, there is nothing to prevent an architect using that for the benefit of himself or of his new clients.

It was mentioned at the outset that the law deems an architect to be acquainted with its general principles to ensure an observance of his advice by his client being free from injurious consequences. The precise extent of this knowledge is not clear. From Jenkins *v.* Betham (15 C.B., 188), we may gain some information. The defendants were engaged by the plaintiff, on his appointment to a living, to value dilapidations. They valued the dilapidations at too low a figure, because of their ignorance of the legal difference between outgoing and incoming incumbents, which they admitted. The Judge at the trial directed the jury that the defendants could not be held unskilful for not knowing the law as a lawyer did, but that they should be liable if they did not display such a knowledge of it as was ordinarily current. On a motion for a new trial the Court held that the defendants should have known the broad distinction existing between outgoing and incoming incumbents. So it seems that an architect may be required to know the broad principles of law applicable to matters within his everyday business, such as ancient lights and the right to vertical and lateral support, and that for damage arising to his employer through his ignorance of such questions he will be held responsible.

In conclusion it may be observed that many of the difficulties experienced and responsibilities undertaken by architects are such as with properly drawn specifications and carefully prepared plans should not arise. The specification is too often looked upon as a mere enumeration of dimensions and catalogue of materials rather than the basis upon which all the obligations of the contractor may be codified. Every specification should contain properly drawn general conditions, with the legal effect of which the architect should be cognisant. It is curious that among building-owners there seems a much higher appreciation of what powers may be wielded under the specification than among the majority of architects, and I think the experience of most of my audience will bear me out when I say that often the first evolution of friction between an architect and his employer is when the latter finds in respect of some ordinary detail of procedure he is unable to restrain some contumacious contractor.

Architects have sometimes bewailed the dearth of legal decisions directly affecting their professional conduct. It certainly is an extraordinary feature that the conduct of architects and engineers has been less frequently called in question than that of almost any other profession. And while to me, as a lawyer, that should be perhaps a matter of regret, I cannot help regarding it as a very bright feature in the pages of legal history, and one fully worthy of those great professions, professions which of all others embrace infinite possibilities and confer lasting benefits on the inhabitants of the world."

The Chairman, in inviting discussion, said that they were glad to have heard the paper, which presented an almost unlimited field for discussion. In listening to it he had been once again impressed with a sense of the great responsibility architects had to bear, and also with the importance of making the basis of their training a wide one. Architects should have a broad, general knowledge of the principles of legal matters in regard to the practice of architects and building contractors.

Mr. Arthur Harston said that they must all feel particularly obliged to Mr. Macassey for his paper, and to his son for reading it so clearly. Mr. Macassey, senior, had done considerable service to the architectural profession in the very able book which he had, in conjunction with Mr. Strahan, written for the benefit of architects—a book which he would recommend to the notice of architectural students who had not yet commenced practice. Lawyers, as distinguished from architects, were free from any liability for negligence, and that was one of the matters in which the lawyer was very much more fortunate than the poor architect, who, in law, was required to be at top an artist and at bottom a detective policeman. A client sometimes knowingly employed a bad builder, relied on the architect to get good work out of him, and held the architect responsible should the builder fail in the attempt. It was always best for an architect not to be backward in talking matters of business to a client before any work was started. One of the best methods of arranging a contract with an employer was to take the schedule of the Institute of Architects, and, having made the necessary alterations in it, send it to the client with a letter saying: "These are the usual terms of architects, and they are my terms." On the subject of negligence he might refer to the case of Rogers *v.* James, in which the owner claimed for negligence. The defence was that as the owner had acted on the certificate of the architect in paying the builder (who made a much larger claim and brought an action against the owner), and as the certificate had been upheld and acted on the owner was estopped from disputing it in any way. The owner said that the architect had been negligent in ascertaining the amount of extras in the executed works, and the Court held that he was negligent. The architect then appealed, and then the Judges of the

Court of Appeal, although they found that the architect had acted in the honest exercise of his judgment, confirmed the decision that he was liable in damages to the owner for negligence. But the previous case in 1871 was not cited—the case of Pappa *v.* Rose—a case which at first sight did not appear to have much to do with architects. It was the case of a Greek gentleman who consigned currants to a broker in Mincing-lane with instructions to sell them, as of fair average quality in the opinion of the selling broker, as soon as they arrived for the best price he could get for them. They were sold, and the buyer was dissatisfied with the quality and appealed to the broker, who, after examining the currants, agreed that they were not of fair average quality. The customer claimed and obtained compensation. Pappa then brought an action against his broker. The principle decided in the action was that the broker was acting in a quasi-judicial capacity as a judge between two parties, and the Court found that he had acted honestly, and was not liable for negligence nor want of skill or care. He (the speaker) ventured to say that if that case had been cited in Rogers *v.* James the judgment of the nine judges who adjudicated in Pappa *v.* Rose would have had considerable influence with the four judges in Rogers *v.* James. But, unfortunately, nobody thought that a currant case could affect an architect, and it was not cited and the architect had to suffer. Two other cases had occurred on the same point in which the case of Pappa *v.* Rose *was* quoted. They were both tried in 1900—viz., Chambers *v.* Goldthorpe* and Restell *v.* Nye.† In both these cases the architect was successful. He hoped that they would not go away with the idea that architects were to shirk their responsibilities; they must make every endeavour not to be careless or unskilful. Another important point which had been touched upon in the paper was as to the authority of the architect to order goods. The architect was an agent, and if he acted without proper authority he caused loss to tradesmen, who could recover against him. An important case bearing on that would be found in the *Builder* just published (Saturday, November 10) —the case of Vaux *v.* Wimperis and Arber. The Limited Liability Company for whom the architects acted having gone into liquidation and the architects having ordered the goods without disclosing their principal's name, were naturally held to be liable. It was a very important case which should not be forgotten. Architects should never give an order on their own name, but in the name of the employer, which course will relieve them from risk, if acting within their authority.

Mr. Hampden W. Pratt, in proposing a vote of thanks, said that the case reported in the *Builder* of Vaux *v.* Wimperis and Arber seemed in the result to have been hard on the architects. One had always understood that in acting for a client an architect was absolved from personal responsibility. From that case they might learn the lesson that they could not be too careful in giving orders. As to getting a contract under the seal of an authority, he might mention an experience he had early in his practice. A joint Hospital Board approved his plans for a hospital; tenders were procured, and the contract was signed by the chairman of the Board, but it was not sealed. The work went on until about 1,000*l.* had been expended by the builder, when a new Board was elected hostile to the hospital scheme. That Board gave up the whole matter and refused to pay any one anything, as the contract was not under seal. That was sixteen years ago, and the work stood just as it was left. The Hospital Board did not possess a seal at all, and at the time he did not think it irregular to proceed with the work without seeing that the contract was under seal. Moreover, the Clerk to the Board was a solicitor, and one expected that everything therefore would be done in proper order. Counsel's opinion was taken in the matter, and the architect, builder, and surveyor were informed that they had no case, and from that day to this not a penny had been paid to them.

Mr. C. H. Brodie said he thought that the reason for the decision in the case of Vaux *v.* Wimperis & Arber was perfectly clear. The architects, who were the defendants, in accepting the tender for the hot-water works, said, "We beg to accept your offer." Mr. Justice Grantham said that the result might be unfortunate, but that architects in giving orders should be careful to make it clear that the goods were not for themselves. He agreed with Mr. Harston that, as this had not been done, the case went rightly against them.

Mr. E. Greenop seconded the vote of thanks. He said that in arranging terms with a client at the commencement of a job a good many difficulties were got over if the architect explained matters to the employer, for clients were usually totally ignorant of the ordinary procedure in having a building erected. As to the liability of an architect, he should like to know whether there was any difference as regards possible liability in ordering variations or extras when the architect acted in an honorary capacity. He did not think an architect should ever act in that capacity, as it was not good for the profession or the clients. The architect should accept the proper fees, and, should he desire, make a donation to the building fund. The law as to the liability of an architect for ordering extras as an agent seemed to be in a state of confusion. As he understood it, an architect might order extras or variations arising in the execution of the work necessary for the proper completion of the contract. That seemed to lead nowhere, because it might be something quite outside the contract and yet be necessary. As to the point that an employer who got to know of the incompetence of his architect was entitled to dispense with his services, that would be rather a dangerous course for the client to take in the middle of a job. Mr. Macassey said, "Where the client was dissatisfied on matters which he could judge very well of, the architect was not responsible"; but although the client might have the drawings of what was proposed shown to him, he might very well say that he did not know what was intended. He understood a contractor was liable for work which had been omitted from the specification or drawings, if the quantities were not made part of the contract, or if there were no quantities, if the specification stated that the client was to have a complete building. The contractor had to do all omissions from the specification, whether they were large or small. He should like to know how far a client could demand the architect's drawings. An architect might get out half-a-dozen preliminary schemes which represented a good deal of work, and from which it would be quite possible for a client to put up buildings; could the architect, in the event of the client not proceeding in the matter, refuse to let the client have the sketches? As to the architect's liability for supervision, there were many small jobs on which a clerk of works could not be engaged, and a visit from the architect once or twice a week was of very little use when there was an unprincipled builder. Would a visit of once or twice a week absolve an architect from liability—once a week in ordinary times and twice a week during the preparation of the foundations?

Mr. H. T. Hare said he had been interested in the point raised in the paper as to the architect's responsibility for the appointment of the quantity surveyor. Of course, the proper and best way to proceed was for the architect to get the authority of his client to the employment of the quantity surveyor, but there were many cases in which that was rather a difficult thing to do. Frequently a client did not realise that quantities were necessary, and he could not understand why he had to pay 1½ per cent. extra, and thought that that 1½ per cent. ought to be included in the architect's fee. Consequently, when tenders were obtained the architect frequently employed a quantity surveyor without any direct authority for doing so. He (the speaker) had always understood that in doing so the architect took a large amount of responsibility, and that in the event of the tenders being too high, and the work being abandoned, the architect would be responsible to the quantity surveyor. But, according to Mr. Macassey, that was not so, *i.e.*, that the fact that a client expressed the desire to have tenders implied the employment of a quantity surveyor. In one sense that was a relief to hear, but it did not seem to be exactly reasonable, for it would be quite possible to have tenders on the specification alone. As to the ownership of drawings, it was generally understood that the client could claim drawings, although he did not think there had been any decision on the subject. That had always seemed to him unreasonable, for the client, in employing an architect, did not employ him to make drawings, but to build a house or whatever it might be, and the drawings were merely the architect's method of conveying his idea to the builder; they were not part of the contract between the employer and the architect.

Mr. A. T. Bolton said he was afraid the difficulty as to the ownership of the drawings was due to the lawyer's idea of the importance of documents. The lawyer could not get away from the idea that the drawings must be on the same footing as all other documents. As a rule, lawyers did not understand drawings, and looked upon them in much the same way as they did upon the specification or actual form of contract, and thought, particularly as they had been signed and referred to as the drawings numbered, say, 1 to 10, that therefore they must belong to the client, and must represent something that the client had paid for. A most unjust extension of that conception had been made, for apparently they had gone so far as to claim every kind of document relating to a case as the property of the client, although, as any architect would readily concede, there might be among them original conceptions of the architect, designs which might be described, in fact, as copyrightable inventions. The classical case on the subject was that of the drawings for the Houses of Parliament, when the Government insisted on having, and they secured, he had always understood, every drawing relating to those buildings, and probably in consequence of that the legal profession had got the idea that drawings must be the property of the client. What architects felt was that the client paid for the skill and capacity of the architect and not for the drawings, especially as it was quite possible to build a building without drawings at all. He hardly expected the legal profession would ever look at the matter from their point of view. The lecturer had delightfully embodied a legal idea of the architect as an onlooker to the employer, or, as Mr. Harston put it, a kind of policeman-detective. A conception of this kind meant that a client could obtain an inferior builder and ease his mind by saying, "It is all right; there is the architect, and he will see that things are done properly." In reality the architect was nothing at all of the policeman-detective. The architect was really almost the builder himself; he was certainly the chief workman in the best sense, and his object, while obtaining good work, was to co-operate with the builder. The idea of abandoning the old judicial position of the architect as between the client and the builder was much to be regretted, and the tendency to emphasise the position of the architect as solely that of an agent to the client was particularly unfortunate, because it might very well happen in certain cases that a good part of an architect's time might be occupied in defending a builder against the exactions of a client, as in cases where the builder was looked upon as a person out of whom a building was to be extracted at less than its real value. The architect wished the work to be done properly, and that was the object of the best builders too. The old idea of the architect standing between the two parties and getting the best results was a good one, and if departed from the profession would fall short of the old high standing it occupied. He hoped the paper would be the precursor of others on the subject of building legislation. The subject was rather overlooked, and young architects were sometimes plunged into practice without knowing much about these things. It was an advantage for an architect to be brought at an early age into contact with these matters, and such papers as that of Mr. Macassey's that evening were a great help to them. The particular case which the lecturer had given to them, where the architect or engineer had been dependent upon the borings taken by his predecessor, was an exceedingly unfair one. Many clients would not care about having fresh borings made, and altogether it seemed exceedingly hard that an architect or engineer should be made responsible for failures arising from the errors of their predecessors. The remarks made about experiments would be a useful additional warning to young architects to be careful of patentees. As to deviations from the drawings, it was a delightfully legal idea that an architect should not make deviations. What did the lecturer think of the Institute form of contract in that connexion? It was a very convenient form of contract to use; it was all in print, and any builder and client could read it and have a copy, and he would like to know what the lecturer thought of its conditions. In this particular point it would be impossible to do

* See the *Builder* for February 10 last.
† See the *Builder* for January 27 last.

satisfactory work at all without deviations. Fortunately, the majority of clients would not thank an architect for asking questions on every point of deviation. He always thought that the Institute form of contract enabled an architect to deal with deviations, apart from the question of extras; but if a client could make a personal claim against an architect for making a chimney, for instance, say, a foot higher than it was shown in the drawings, it might be a serious matter.

Mr. F. G. F. Hooper said that in France the architectural profession was much more regulated and recognised than it was in this country, and the legal position of the architect was much more clearly defined, while there existed a Society, with a centre in Paris, which took up test questions on behalf of architects. The Society was supported at the joint expense of the body of architects, and a case, instead of being fought by an individual, was fought by the Society should it be an important one, and one affecting the whole profession. The idea, perhaps, was not a bad one, although in this country architects were anxious to avoid any semblance of trades-unionism. He thought it would be undignified if an architect undertook no liability or responsibility in his work. Architects should be prepared to take any responsibility which legally fell upon them, but in financial matters an architect should not fail to consult his client and get instructions for all he did.

Mr. Harston said he would like to add a few words about the case of Vaux *v.* Wimperis and Arber. If the company had not gone into liquidation there would not have been any difficulty in the matter. If an architect had received instructions from a solicitor to do certain work, and if the client went bankrupt, and the architect attempted to recover from the solicitor he would fail because, *primâ facie*, the solicitor was acting, not for himself but for his client. In the case referred to there might yet be an appeal on the ground that, *primâ facie*, the architects in ordering the goods were agents, and that the onus of proof to the contrary lay with the plaintiffs who were claiming against them for the cost of the goods.

Mr. Guy M. Nicholson said that some of the decisions quoted by Mr. Macassey seemed to point to the fact that the law was in a very bad state with regard to buildings. Some of the decisions made it almost impossible to carry out a contract—the decision of Priestly & Gurney *v.* Stone, for instance. If a builder had no claim against anybody when a serious omission was made in the quantities, it would practically prevent him tendering at all. To expect the builder to check the quantities was absurd. In a large building, like the Law Courts or the new War Office, the quantities required six months or more to take out, and how could the builder check them in three weeks? It was unfair to ask him to do more than price the quantities, on the mere chance of obtaining the work. It was also unfair to expect him to do work which was omitted from the quantities without paying him for it, as in Priestly and Gurney *v.* Stone. If he was referred to the quantity surveyor for payment, it would be useless in many cases, as the surveyor's commission only covered the cost of preparing quantities and was not sufficient to pay for a portion of the building as well. Hence, if the omission was of any size, the surveyor would probably become bankrupt and the builder would get little or nothing. The remark had been made that it was not necessary to have quantities when obtaining tenders. That was so, but it would take a very long time, and in buildings of any size builders would not tender without them. In two recent cases when there were no quantities considerable loss of time resulted, as the builders, after keeping the drawings for a week, returned them with the remark that the work was too complicated to tender on without quantities, and for that reason, and because they made it a point to refuse to tender for work to cost over 1,000*l.* when there were no quantities, they must refuse on this occasion also. The law seemed to point to the necessity of quantities being made part of the contract, and the argument that the surveyor under those circumstances would get careless did not hold good, for if he made a mistake he would injure his reputation and lose his work. The Admiralty had forced their surveyors to pay for their mistakes as far as they were able, but it was an unsatisfactory system, as it encouraged quantities being taken full, to cover any mistakes.

Mr. Osborne Smith having made some remarks as to the ownership of drawings,

Mr. Brodie said the question of ownership of drawings amounted to very little. Every sensible architect in these days of process reproduction had duplicate copies made of his drawings, and made one of these sets the contract drawings, keeping his own handiwork himself. ["They claim more than that."] Yes, but they must prove their right to more. The fact that so few architects and engineers got into the Law Courts over their work was a triumph of common sense over law. As to supervision, in a recent case an architect was mulcted in heavy damages in consequence of dry-rot spreading through the house due to the existence of a lot of shavings in the foundations and in the concrete. On the face of it, it seemed to be a most unjust decision, for an architect could not always be on the work, and it might easily happen, where there was no clerk of works, shavings might get mixed up with the concrete.

The Chairman, in putting the vote of thanks to the meeting, asked if Mr. Macassey could give them a rather more complete definition of the term *agent*. He would also like to know what Mr. Macassey's views were as to the Institute's Conditions of Contract. He (the speaker) noticed that architects were fast surrendering all their powers, as agents to the building owner to a court of arbitration, or to an individual arbitrator, and it was a question how far clients would regard that as a surrender by architects of their duties and responsibilities. The whole matter was to come before the Institute for discussion, and he hoped that all those who were interested in the matter would attend and give the matter full consideration. Architects should be most careful never to put work out to public tender unless they reserved ample power as to the condition of the successful contractor. The point as to deviations was a most important one. Architects should have an understanding with the client before the contract was entered into that they should have power to deviate when necessary. If architects were put under a hard and fast rule that no considerations of art, &c., were to justify such deviations that would mean taking the very soul from their art work. It must occur to every thoughtful man to make improvements as the work went on; if he did not he was not worthy of the name of an architect. It would be absurd if they had to consult their client on all points of deviation, and no architect would agree to it. As to trades-unions, they must all be heartily in favour of them whether they had to do with professions or not, so long as those unions worked in directions which were legitimate. He felt that bodies like the Institute of Architects should be able to defend members of their body against litigation which might be oppressive.

The vote of thanks having been heartily agreed to,

Mr. Lynden Macassey, in reply, said that as to the cases of Rogers *v.* James and Pappa *v.* Rose, they were, he thought, capable of being distinguished. As to the liabilities of quantity surveyors to builders, a quantity surveyor was not liable to a builder in the case of errors in quantities except in the case of fraud, and fraud was where he would submit an inaccurate bill of quantities knowingly, or a bill of quantities which he did not know to be accurate or not, or a bill of quantities recklessly and carelessly got up. If the quantities were taken out to the best of the surveyor's ability and knowledge, the surveyor was not liable for error, and that was a very fair condition for the law to insist on. As to a definition of agency, an important consideration is the law relating to architects. An agent was a person appointed by some one to act for him, so far as he the principal might legally act, and such acts of the agent were considered the acts of the principal. The agent must be appointed in a proper way, and must have proper authority. He might be appointed to do all things in general or only to do certain things. In other words, he may be a general or special agent. An architect was a special agent to design and superintend the construction of works. He was to superintend the works that his principal had agreed to, and he was bound to carry out those works. During the execution of the work points would arise, as to which he must exercise his discretion, though, if he had not authority to exercise that discretion, he could not do so. Surely it was an easy thing to have it inserted in an agreement or contract between the building owner and contractor that the contractor and building owner should agree that the contractor should carry out all such deviations which the architect in his discretion might deem necessary. That would give an architect full authority to exercise his discretion and bind his employer, and if that were done an architect would be under no liability provided he acted honestly and to the best of his ability. Without that authority architects had no power to order variations and omissions, and if they did order them without the express wishes of their client they were liable. As to the case of Vaux *v.* Wimperis and Arber, the points were quite clear as reported in the current issue of the *Builder*, and the decision was consistent with all the principles of law. The hot-water pipes were ordered by the architects and accepted by them, and there was no disclosing the fact that they acted for any one but themselves. But, in ordering, had they disclosed the fact of their agency, they would not have been liable. The engineers supplying the pipes must have looked to the building owner for payment. [A voice: "But the plaintiffs must have known that the architects were agents to the building-owner."] On the facts there was no suggestion as to that. The architects sent the order and accepted the offer of the engineers on their own authority. It was in the power of the architects to protect themselves, for they could have ordered as agents, and in that way have protected themselves against responsibility. [A voice: "Would the client's initials on the estimate be sufficient?"] Not apart from a distinct custom in the profession [A voice: "It was shown that the clients had paid money on previous certificates, which showed that the plaintiffs knew that the architects were acting as agents"]. This appeared to be the only transaction between the architects and this particular firm. As to the position of the architect in relation to the employer and the builder, he thought it was a most impolitic thing, as some gentlemen proposed, for any one to act as agent for both parties. As to extras, an architect had no power to order them unless he had discretionary power under the contract, but apart from that he could not, without express authority from the client. Architects as a profession should take steps to form the profession into a close one as solicitors and doctors had done, and he believed that was what both architects and engineers would eventually do, and in that way clearly define what their liabilities were.

The Chairman announced that the next meeting would be held on the 23rd inst., when Mr. A. T. Walmisley would read a paper on "The Use of Rolled Joists in Construction." The members of the Institution of Junior Engineers had been invited to attend on that occasion.

The meeting then terminated.

THE SURVEYORS' INSTITUTION.

PRESIDENT'S ADDRESS.

The first ordinary meeting of the present session of this Institution was held on Monday evening, in the premises of the Institution, Great George-street, Westminster, the President, Mr. John Shaw, in the chair.

The minutes of last meeting having been confirmed, the hon. secretary, Mr. J. W. Penfold, read a long list of donations to the library, and on the motion of the President, a vote of thanks was accorded to the donors.

The President then read an interesting address, which, however, was almost entirely taken up with questions of agriculture, which it is not within our province to report. The following passages, however, will be of interest to some of our readers:—

"Difficulties are frequently cropping up in rural districts now under by-laws really applicable to urban districts only. The effect of these by-laws is to make it necessary in all alterations of premises, or any new buildings erected in future, to supply plans and specifications to the Sanitary Inspector, whether such work relates to a populous district or to a country village, and also to detached farm-premises. I think that some exception should be made with reference to an isolated farm house and buildings and also to detached premises in a country village. The Acts regulating the ventilation, drainage, and area of cow-houses are most important, and have a

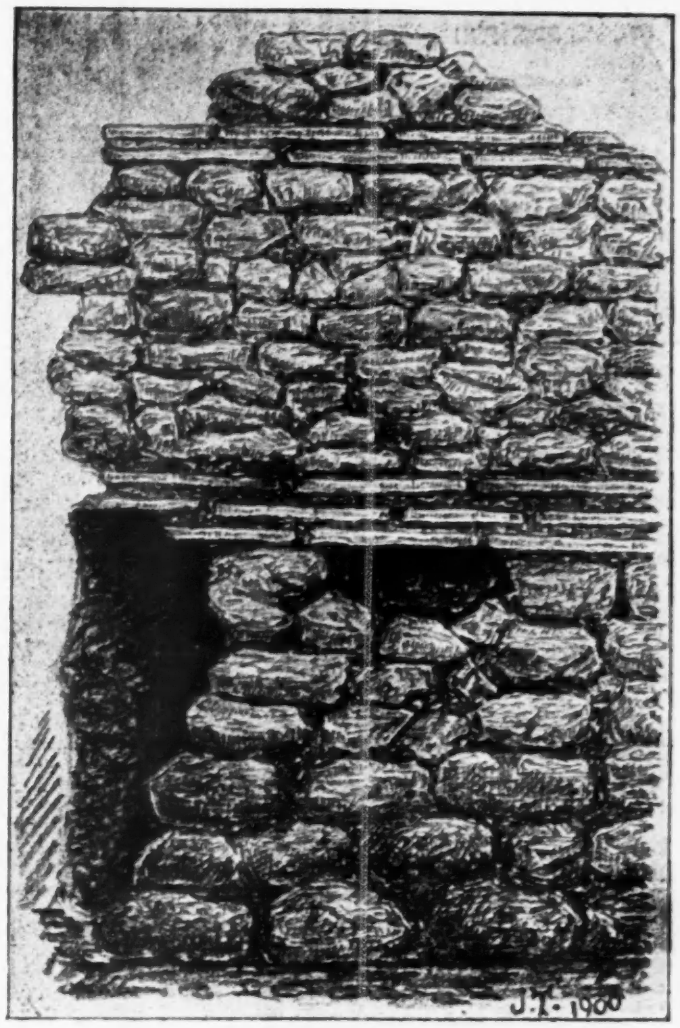
far-reaching tendency all good in their way, and might be carried out in all new buildings, but it would be a serious and expensive undertaking to remodel altogether the present cowsheds and premises. A good deal of dissatisfaction has been felt in the country with reference to the requirements of the model regulations issued by the Local Government Board for the guidance of local authorities in framing regulations under Section 13 of the Dairies, Cowsheds, and Milkshops Order, 1885. It was felt that the 800 cubic feet of air space required per cow was excessive, and the Council, at the suggestion of the Counties Palatine Provincial Committee, approached the Board on the subject with a view to some modification of this requirement, with the result of eliciting an explanation from the Board to the effect that they did not propose to lay down any requirement as to cubic space in the case of cowsheds, the cows from which were habitually grazed, but no modification of the requirement could be made in cases where the cows were not habitually grazed out of doors. It is probable that this will to some extent meet the dissatisfaction which prevails on the subject, and will tend to lessen the very considerable additional difficulties with which the milk trade was threatened. . . . For the grazing of cattle and the production of milk, nothing is of more importance than an ample supply of good water. In consequence of the great extension of the system of subsoil drainage, the rains now pass away so quickly into the rivers and streams, that springs have for some years been very low, and during dry times there has lately been a great scarcity of water both for cattle and for household purposes. It appears from the experiments of practical engineers that a large quantity of water might with proper management be impounded without interfering with the necessary river supply. More than thirty years ago I was engaged with the late Professor Anstead and the late Dr. Letheby in testing the flow of water in a great part of the river Derwent in Derbyshire, and we found an immense amount of underground water in the valley of the Derwent which could not be accounted for except by underground springs, which I have since proved and utilised. I should also like to refer to Mr. Mansergh's wonderful work in Wales for the supply of water to Birmingham, where, after providing 27 millions of gallons daily for the necessary compensation water for the rivers flowing from the valley, he estimates an excess of 72 millions of gallons daily available for Birmingham and other places, and this water if not so impounded would flow rapidly away and be of no practical use. This illustrates what might be done on a small scale in many parts of England, and I should be very glad if the subject could be taken up by some of our engineering members."

On the motion of Mr. A. Buck, seconded by Mr. Daniel Watney, a vote of thanks was accorded to the President for his address. Mr. Buck, in referring to the labour question, said there were various causes why labour had left the country and gone to the towns, but in his opinion the chief cause was the wretched state of the homesteads in which agricultural labourers formerly lived. The dwellings were often built on waste lands, there were no sanitary arrangements, and the younger generation of farm labourers became disgusted with their surroundings. In recent times this matter had been seen to, but there was a danger of going to the other extreme in the attentions of the sanitary authorities.

The next meeting of the Institution will be held on the 26th inst., when Mr. A. T. Walmisley will read a paper on "The Roofing of Farm Buildings."

COMPETITIONS.

Newport Technical Institute. — We understand that Mr. W. V. Gough, of Bristol, and Mr. A. A. Burnett, F.S.I., of Southampton, have been awarded the premiums of 50*l.* each for plans for the new Free Library, Technical Institute, and County Offices at Newport, Isle of Wight, the plans of the former being adopted, subject to alterations, at an estimated cost of 9,500*l.* There were fifty-four competitors, and six plans were selected by the assessor (Colonel Edis, F.S.A.), the remaining four being:—Messrs. Houston & Houston, London; Mr. C. A. Sharpe, Westminster; Mr. H. Chatfeild Clarke, London; and Mr. F. A. Tugwell, Scarborough.



Fragment of Roman Wall of London Discovered at the Old Bailey. From a Drawing by Mr. J. Terry.

THE ROMAN WALL FRAGMENT AT THE OLD BAILEY.

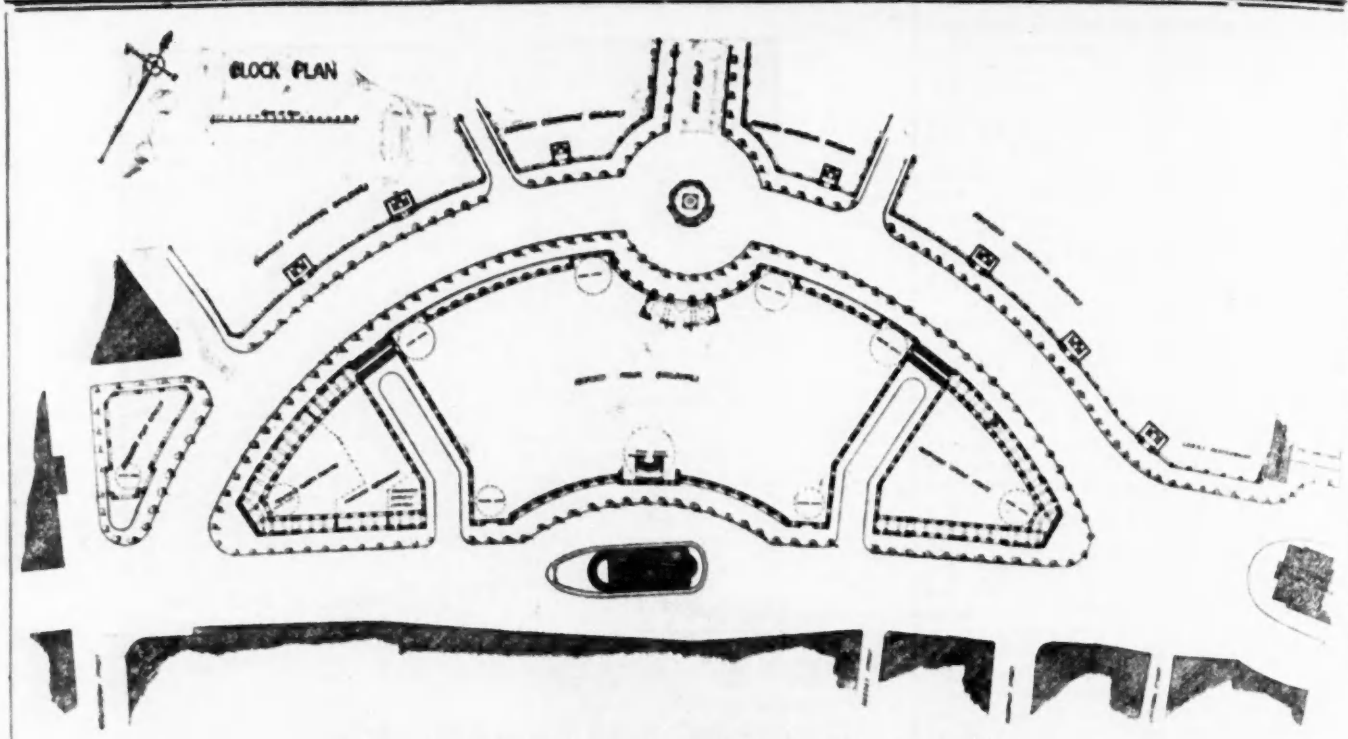
The accompanying sketch of the fragment of the Roman London wall recently uncovered at the Old Bailey was made by Mr. Terry, the Clerk of Works to the Corporation, who has kindly placed it at our disposal for illustration. It was, he says, impossible to take a photograph of the face of the wall in consequence of its proximity to another wall; but he has made the drawing with great care to give the exact appearance of the masonry.

The principal dimensions are figured. The lower portion of the wall, below the middle courses of tiles, projects about 14 in. in front of the upper portion above this point.

ENGINEERING SOCIETIES.

The Institution of Civil Engineers.—At the ordinary meeting on the 13th inst., Mr. Mansergh, President, in the chair, a paper on "The Metropolitan Terminus of the Great Central Railway," by Messrs. G. A. Hobson and Edmund Wragge, MM. Inst. C.E., was read. The paper described the important works carried out in the St. John's Wood district in the construction of the latest London terminal station, comprising the tunnelled approach, the various under-bridges and over-bridges, the large goods warehouse and yard, the coal depot, the passenger station, new roads, &c. The sorting-sidings and engine-sheds, situated at Neasden, were also described. The Metropolitan division commenced at a point near Finchley-road Station, and terminated at the spot where Blandford-square had formerly existed. Under Lord's Cricket Ground, where there were shunting lines and sidings, three covered ways, containing altogether seven lines, had been constructed. The whole of the underground work was in the brown and blue clays of the London basin, and had been carried out without mishap of any kind. South of "Lord's" the lines began to spread out and to multiply, until at the crossing of the Regent's Canal accommodation for fourteen roads was provided. These were carried by a steel bridge of two spans, one span crossing the canal, and the other being a provision for the authorised "Canal, City, and Docks Railway." This bridge was of steel, and of the considerable width of 425 ft. The yard for the goods and passenger stations lay immediately to the south of the canal. To the west of the bridge the canal had been widened to form a basin, and a wharf-wall and shed had been constructed. The goods warehouse was a building consisting of five floors, and having a total area of 11½ acres and a contents of 8,500,000 cubic ft. The outside walls were built of brick, and the interior structure was mostly of steel, of which about 7,000 tons had been employed. The columns were ninety in number, seventy-two of which bore a load of 700 tons each. This load was distributed by means of steel base-plates and concrete foundations (weighing a further 100 tons per column), until the pressure on the clay was reduced to 3 tons per square foot. The warehouse was surrounded by a yard covered with a light roof. The coal depot, at present 4½ acres in area, was situated to the west of Grove-road, and was reached by a branch line carried under that thoroughfare. The yard was laid out entirely to suit the present method of handling coal by the dealers in London. It was intended to double the size of the yard as early as possible. The passenger station, known as Marylebone, was also described in detail.

American Machinery Pavilion, Paris.—The American Pavilion for Machinery at the Paris Exhibition is to be brought to Manchester and re-erected there. Messrs. Potts, Son, & Hennings, architects, have inspected the building, and on behalf of their clients, Messrs. Mather & Platt, of Salford, have arranged with the American Commission in Paris to purchase the structure as it stands with all accessories. Messrs. Mather & Platt have recently acquired fifty acres of land and propose to erect new works, and the building referred to will form an interesting feature in the scheme.



Design for New Street for the London County Council. No. 20. Plan.

Illustrations.

DESIGNS FOR NEW STREET FOR THE LONDON COUNTY COUNCIL.

We publish in this issue the elevations of four more of the designs recently made for the crescent street and Strand frontage in connexion with the proposed Holborn to Strand street; viz.: those numbered respectively 17, 20, 21, and 29. As we have before observed, though the names of the architects are known, as long as they are (as they still are) officially private we do not think it proper to insert their names. When the embargo of silence is removed by the County Council authorities, we will then give, in a prominent position, a list of the architects with a reference to the distinguishing numbers of their designs, and to the dates when they were illustrated in our pages.

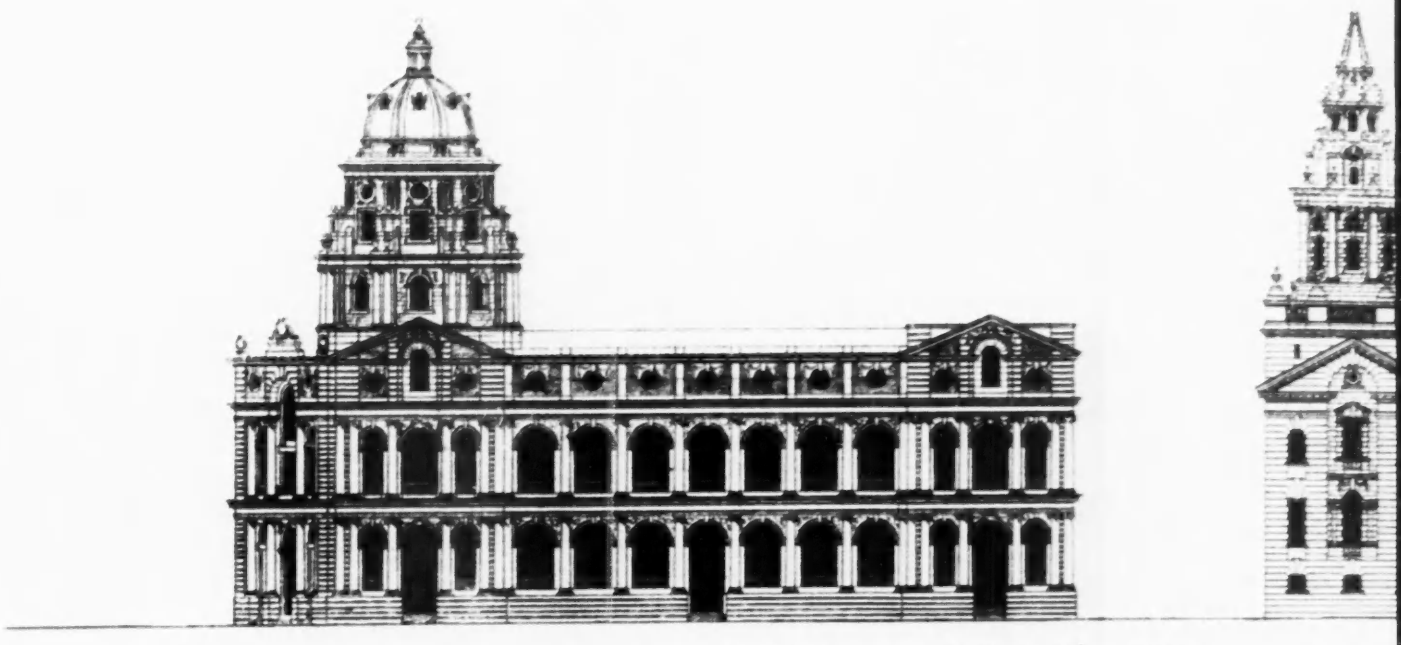
We have already, in our issue of November 3, commented at length on all the designs here illustrated. We subjoin the plan of No. 20, because it embodies a special feature in the laying out of the streets—the circus and central object at the junction with the main street proposed. We have given the plans whenever they contained any feature which was an essential element in the design, and which seemed necessary to explain the elevations. The profile of the frontage of No. 21, and the block plan of No. 17, were included on the elevation drawings, and have therefore been reproduced in the lithographs.

ARCHITECTURAL SOCIETIES.

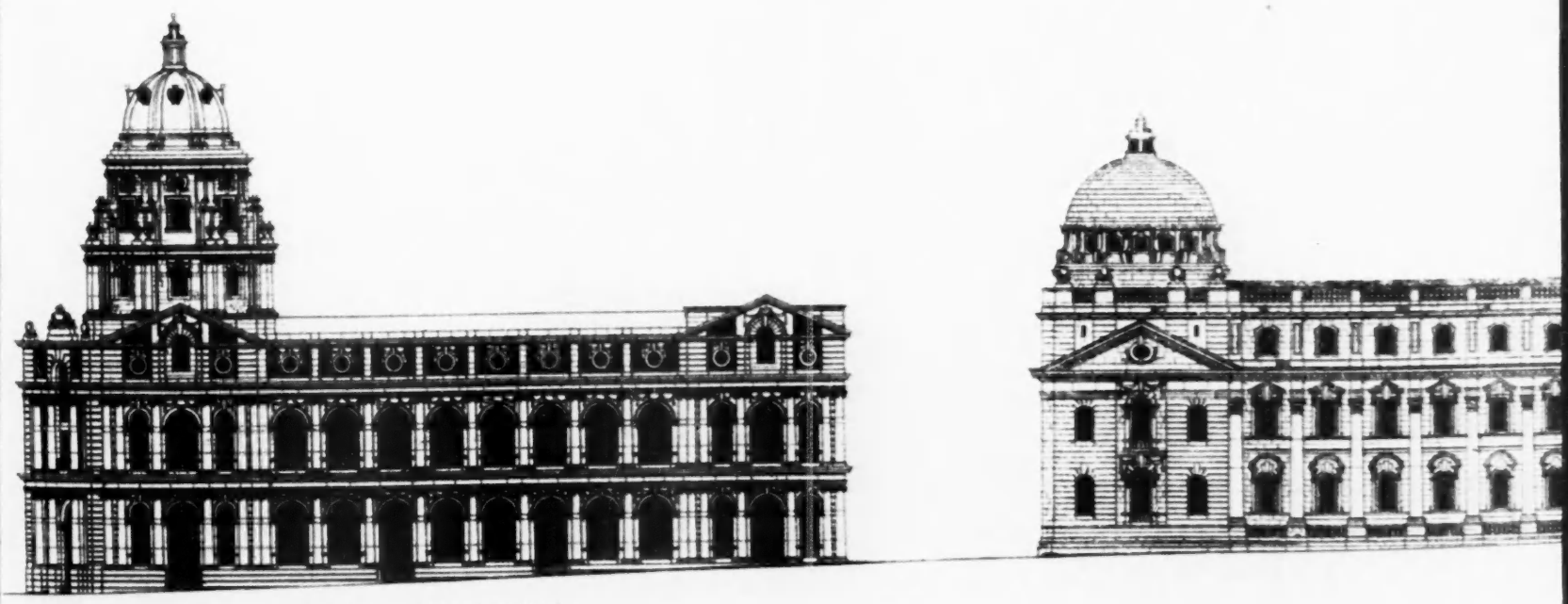
Glasgow Institute of Architects.—At an extraordinary general meeting of this Institute held on Tuesday—Mr. David Thomson in the chair—a special resolution was confirmed bringing the declaration required from members of the local Institute into conformity with the declaration of the Royal Institute of British Architects. At the same meeting reference was made to the death of Mr. Young, architect of the Glasgow Municipal Buildings and other important works, and the secretary was instructed to minute an expression of sincere regret thereon. At the close of the general meeting a meeting of the Alexander Thomson Memorial Trustees was held, under the presidency of Mr. T. L. Watson, for the purpose of examining the drawings and sketches submitted by Mr. D. Rome Guthrie, the Alexander Thomson travelling student. Descriptive notes of Mr. Guthrie's journey were read by Mr. M'Gibbon.—*North British Mail.*

The Architectural Association of Ireland.—On the 6th inst. there was a meeting of this Association in the Grosvenor Hotel, the President, Mr. Frederick Batchelor, in the chair, when Mr. H. W. Chubb, of London, read a paper on "The Development of Locks, Keys, and Safes," which was illustrated by pictures of locks used from the earliest times, and also by lantern views. Commencing with a reference to the most primitive means of security—namely, a simple bar and pin—he spoke of Egyptian locks in wood and Roman locks in bronze and iron, exhibiting an increased degree of complication. He showed models of curious Chinese and Japanese padlocks at present in use, and directed attention to a picture of a Roman ring which had a key and seal attached. Early English keys were more in the form of modern ones. Pointing to a diagram of a beautifully designed key of the Renaissance period, he said that before an apprentice was at that time admitted to the guild of locksmiths, he was obliged to make a very fine key to be presented to the chief craftsman; and one or two years was often spent by the apprentice in making a simple key. A characteristic of some German locks of the Middle Ages was that they had projecting guides to enable a person to find the keyhole when he came home on a dark night. Prominent amongst the exhibits shown was a collection of Roman keys which, until recently, formed part of the "Forman" collection. Nearly every known variety of Roman key was illustrated in this, from the small finger-ring key up to the largest kind. One had a seal formed upon the end of its bow, with the letters "S. C." reversed. Two are almost unique, having angle-shaped bits; only one of this kind has been observed by the lecturer elsewhere, viz., in the Brussels Museum. Apart from the very varied forms of "bits," all proclaiming different kinds of mechanism in the locks they served, the bows were usually plain rings, but ornamentation was observable in a few. Where this was the case, the bows were of bronze and the rest of the key—or such portion as has escaped rust—of iron. In referring to Cammell's "99" steel alloy, Mr. Chubb said that recent experience in making up plates and slabs of this material into bankers' strong rooms had considerably increased the respect in which it was held by all those who had to work it. At no stage whatever of its manufacture was it soft, so that it either had to be worked and shaped when it was red-hot, or else by exceedingly powerful appliances when it was cold. As it had been found impossible to drill holes through it even with the heaviest steam-driven machinery at anything like a commercial speed, recourse was had to punching; and the force necessary for making each hole was ascertained to be 150 tons. The noise of the punching was like the report of a gun. Its immense toughness, which was practically twice that of the very best Siemens steel, interfered somewhat with the process of making each piece level. A few days ago a plate of it only ½ in. thick proved so stubborn when being passed through the levelling rolls, that it broke a solid iron roller no less than 14 in. diameter right across its middle. It was not claimed that this alloy was absolutely impervious; but those facts showed that it possessed the two qualities of hardness and toughness, which were both necessary for the best bank rooms, in a degree so marked, that it was probably superior to any other kind of homogeneous steel for the particular purpose. A recent application of Cammell's Harveyed steel to the protection of bankers had been shown at the Paris Exhibition. A slab of this material 4¼ in. thick was first taken up to Messrs. Armstrong & Mitchell's proof ranges, and there fired at at a range of 50 yards with a 6-in. 100 lb. shell. The shell was shattered, and the slab, which was uninjured, was then provided with hinges and turned into a door. It had no hole whatever through it, or even into its outer surface, to give lodgment for nitro-glycerine or dynamite; and, when closed, it had the appearance of being the entrance to, say, an Egyptian tomb, since there was not even a handle by which to pull it open. How the various locking and unlocking movements are effected was fully explained.

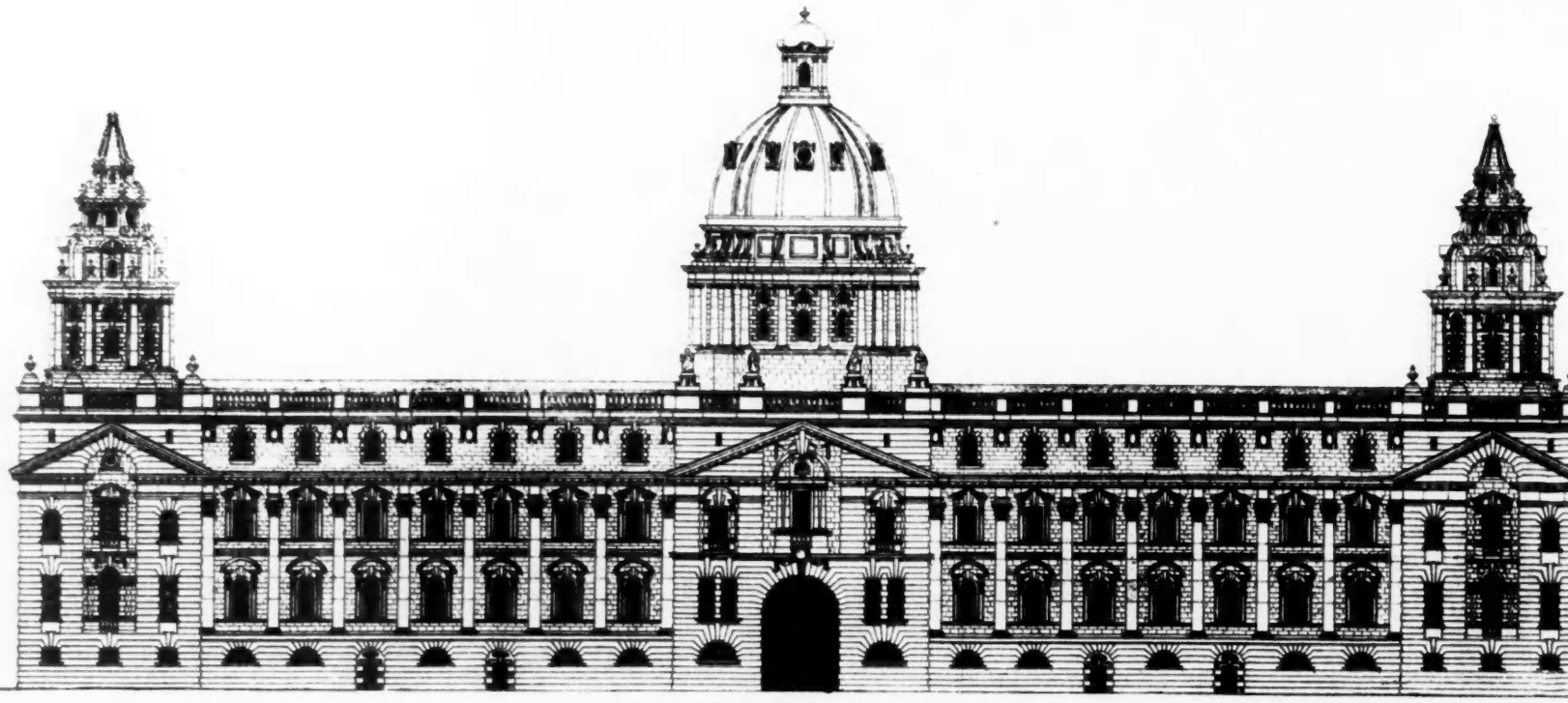
Sheffield Society of Architects and Surveyors.—The first ordinary monthly meeting of the present session of the Sheffield Society of Architects and Surveyors was held on the 8th inst. at the School of Art. Mr. J. Smith occupied the chair. Mr. Beresford Pite read an interesting paper on "The Crafts and Art of Brickwork." Mr. Pite, who has recently been appointed Professor of Architecture in the Royal College of Fine Art, in the course of his lecture, said: The importance to a designer of full acquaintance with the nature and properties of the materials for which he designs needs not to be stated at length. In order to give expression in work to the special qualities of a material, his knowledge of it must not only be technical as to its nature and manufacture, but historical, so that its traditional uses and suitability may be considered and reflected in design. There is a necessary harmony and relation between the means employed and the end to be attained in architecture, as in every work of beauty. Beautiful design, sound construction, and satisfactory materials are each necessary to good architecture. The different expression of a wall erected in stonework and another built of bricks is an illustration of the importance of the material artistically. In that of stonework, the stones from their size and natural beauty, give the wall its character and expression. The material is natural, and may be in itself delightful; the working of it, the binding and jointing, and the cement are all certainly important, but secondary entirely to the stone in the interest of the structure. In a brick wall, the material is of no great in-



PROPOSED GAIETY THEATRE. PROPOSED RESTAURANT. PROPOSED SHORT'S, LIMITED.



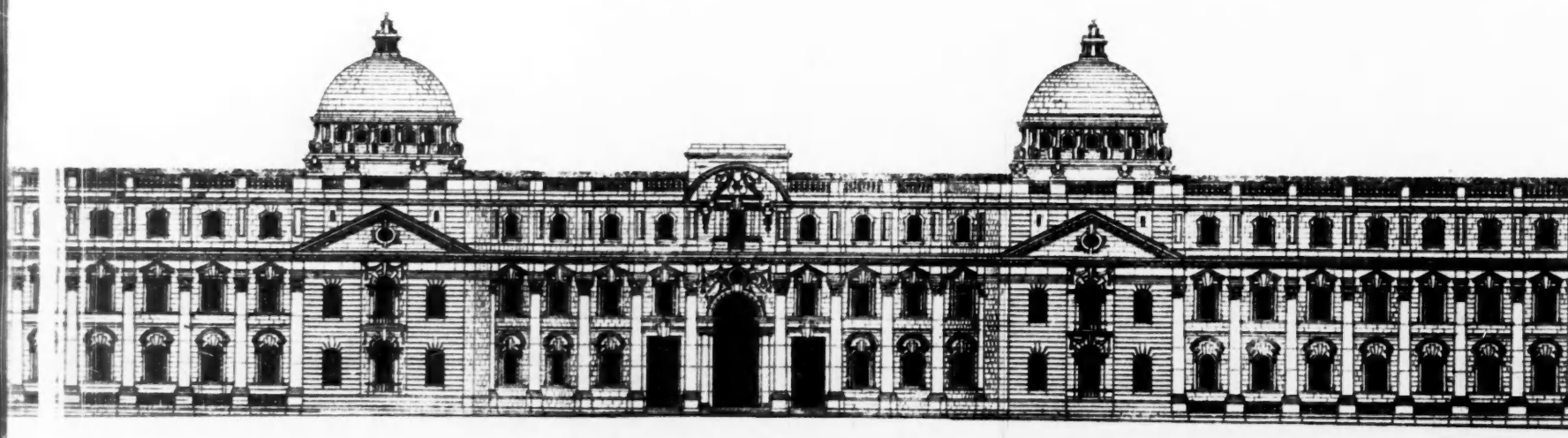
PROPOSED OPERA HOUSE.



LIB ED.

PROPOSED PUBLIC BUILDINGS.

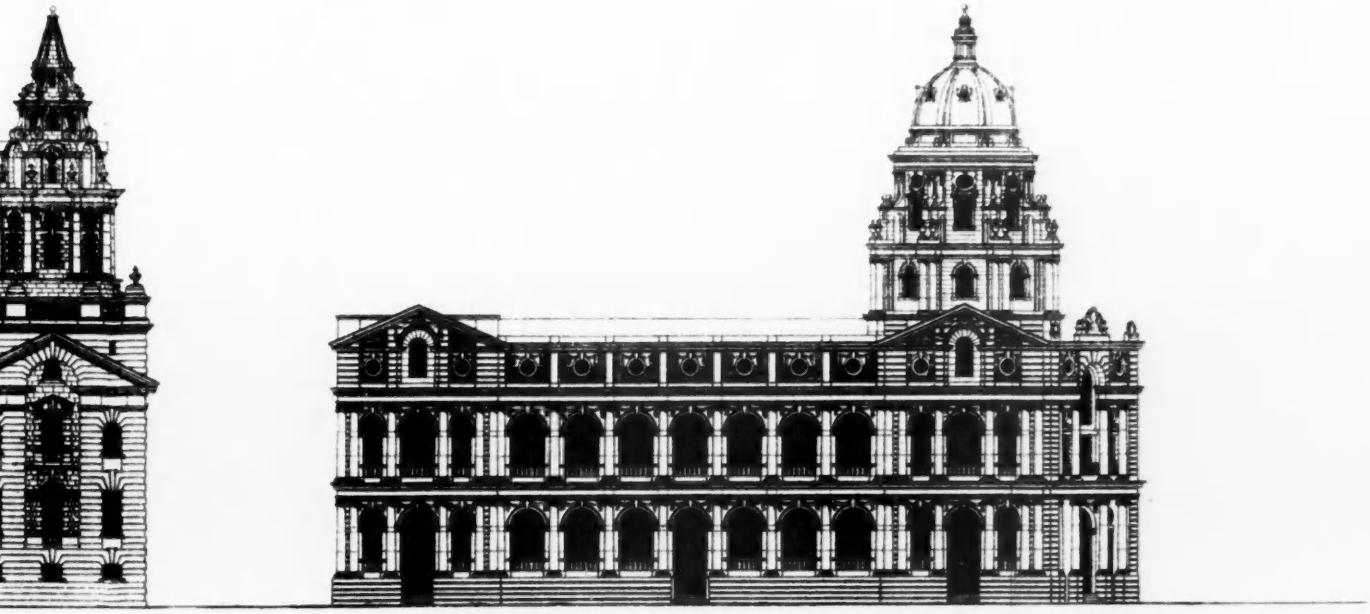
STRAND FRONTAGE.



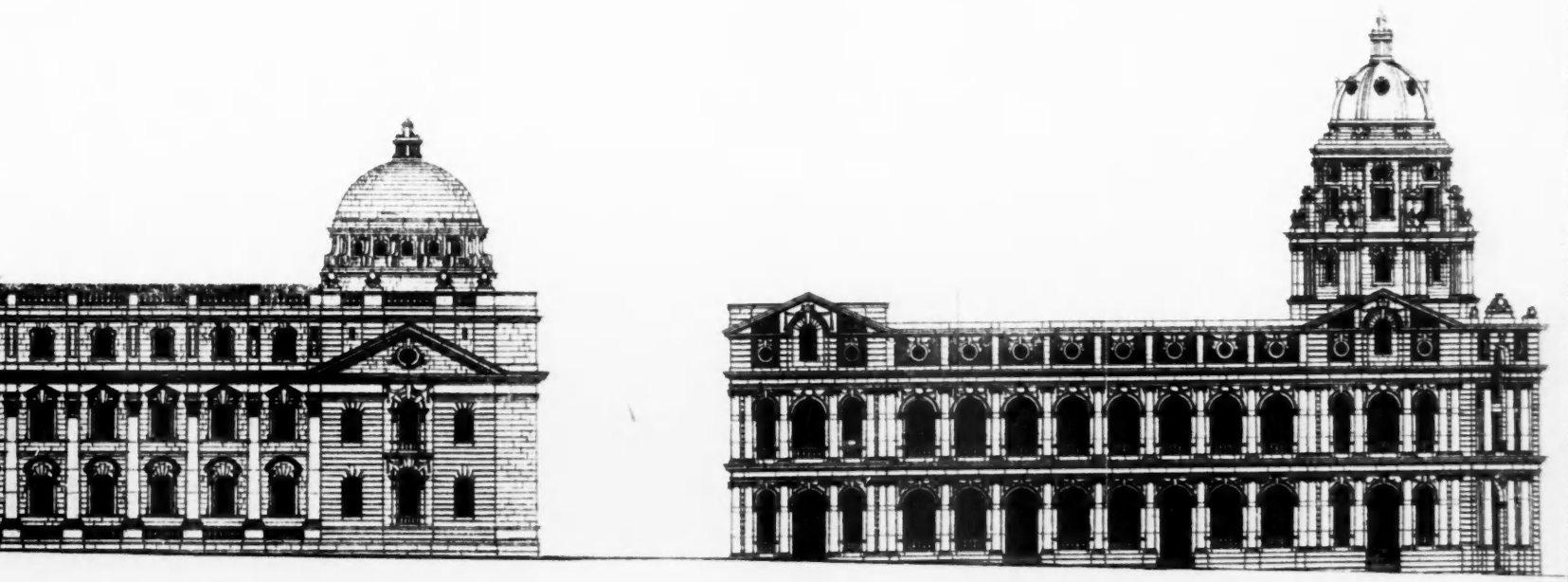
PROPOSED PUBLIC BUILDINGS.

SOUTH SIDE OF CRESCENT STREET.

SCALE OF FEET.

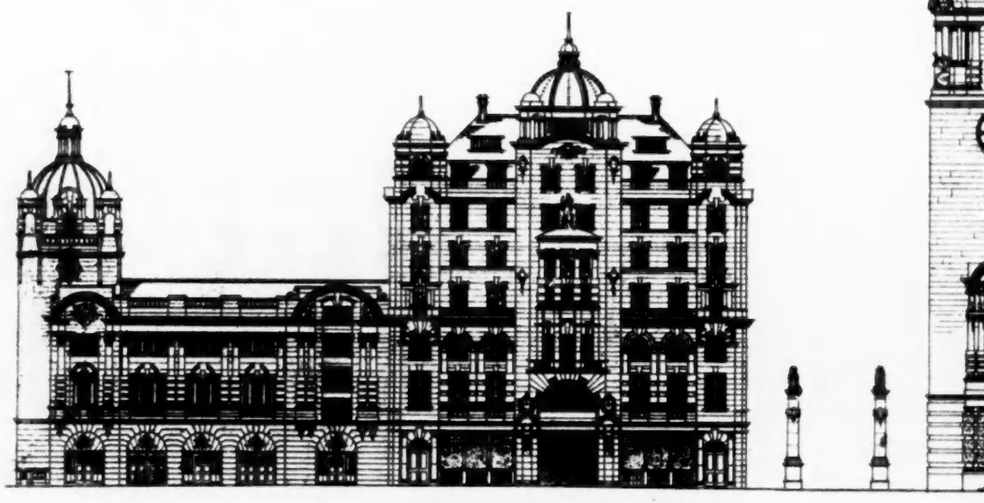


PROPOSED OPERA HOUSE.



PROPOSED GAIETY THEATRE.

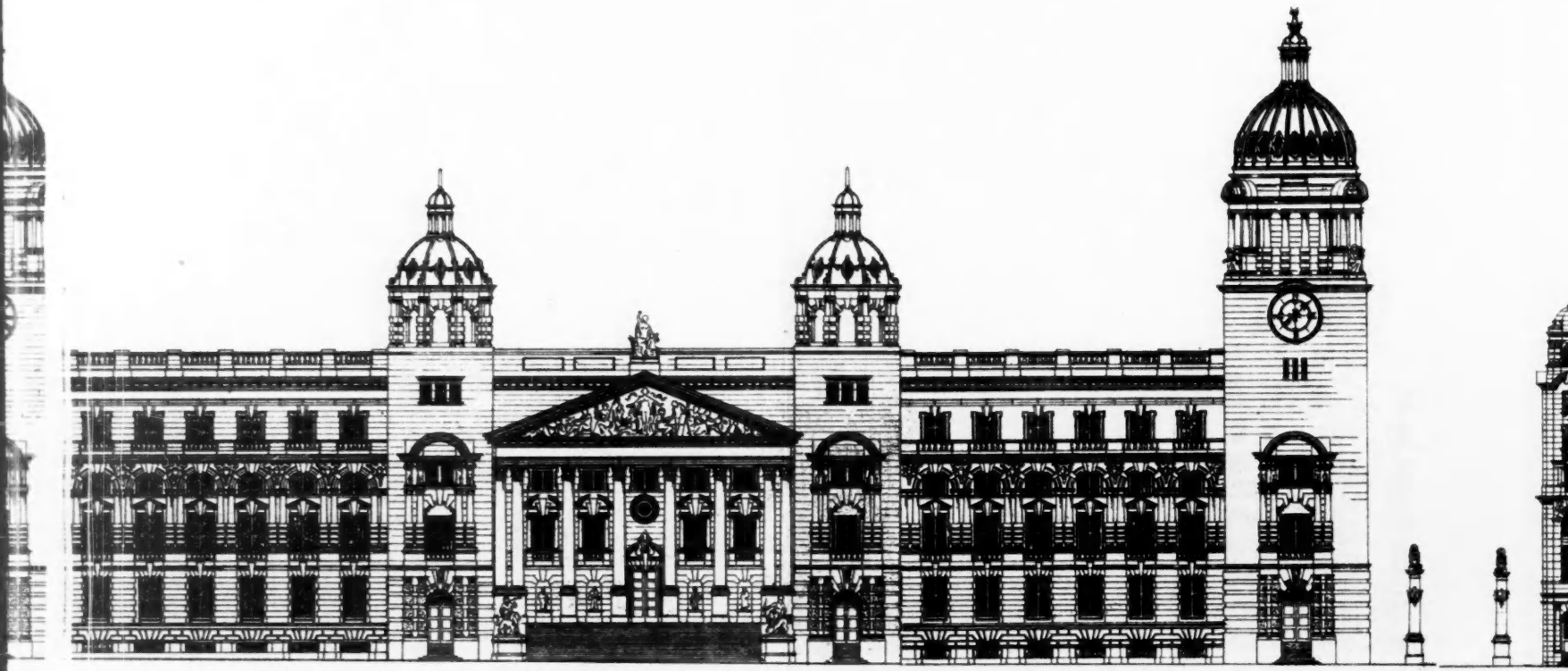
PHOTO LITHO. SPRAGUE & Cº LTD 4 & 5 EAST HARDING STREET, FETTER LANE E.C.



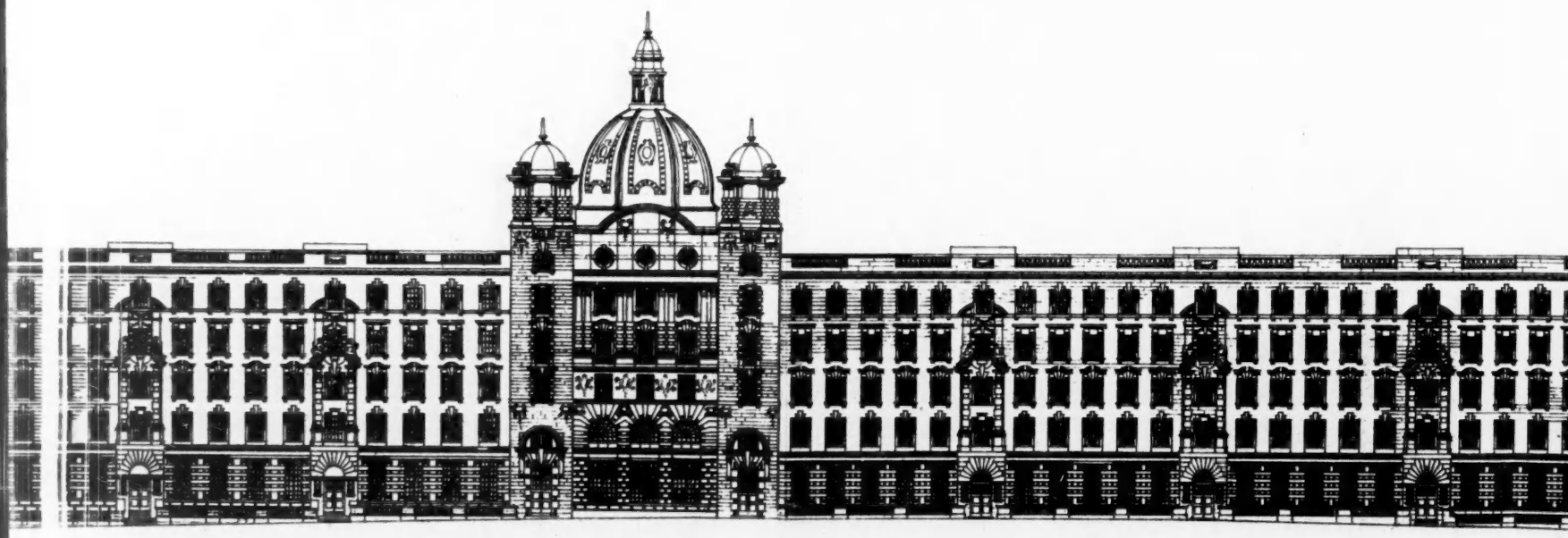
DESIGN SHEWING THE STRAND "ISLAND" SITE ADAPTED FOR MUNICIPAL BUILDINGS.

DESIGN SHEWING TYPE OF COMMERCIAL TREATMENT ON THE SOUTHERN SIDE OF THE CRESCENT STREET.

DESIGNS FOR NEW STREET ARCHITECTURE FOR THE LONDON COUNTY COUNCIL.—DESIGN NO. 17.

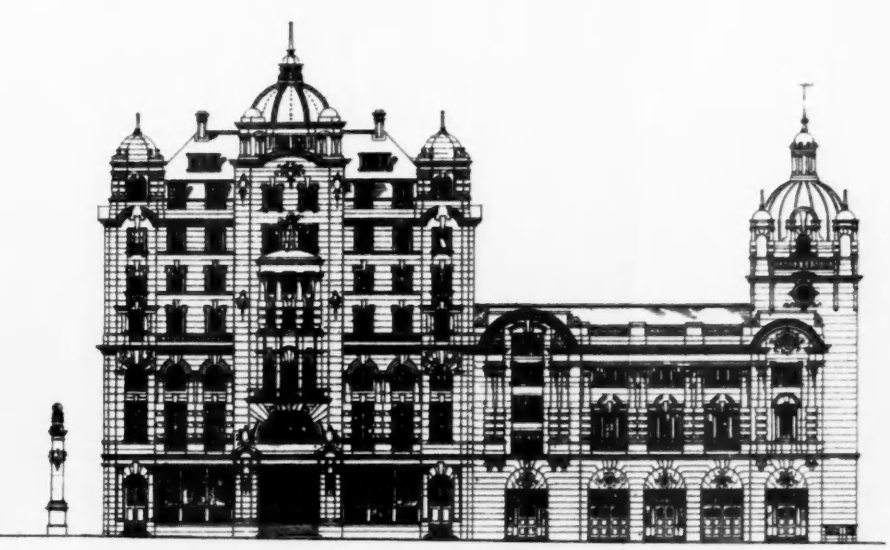


DESIGN SHEWING THE STRAND "ISLAND" SITE ADAPTED FOR MUNICIPAL BUILDINGS.



DESIGN SHEWING TYPE OF COMMERCIAL TREATMENT ON THE SOUTHERN SIDE OF THE CRESCENT STREET.

DESIGNS FOR NEW STREET ARCHITECTURE FOR THE LONDON COUNTY COUNCIL.—DESIGN No. 17.



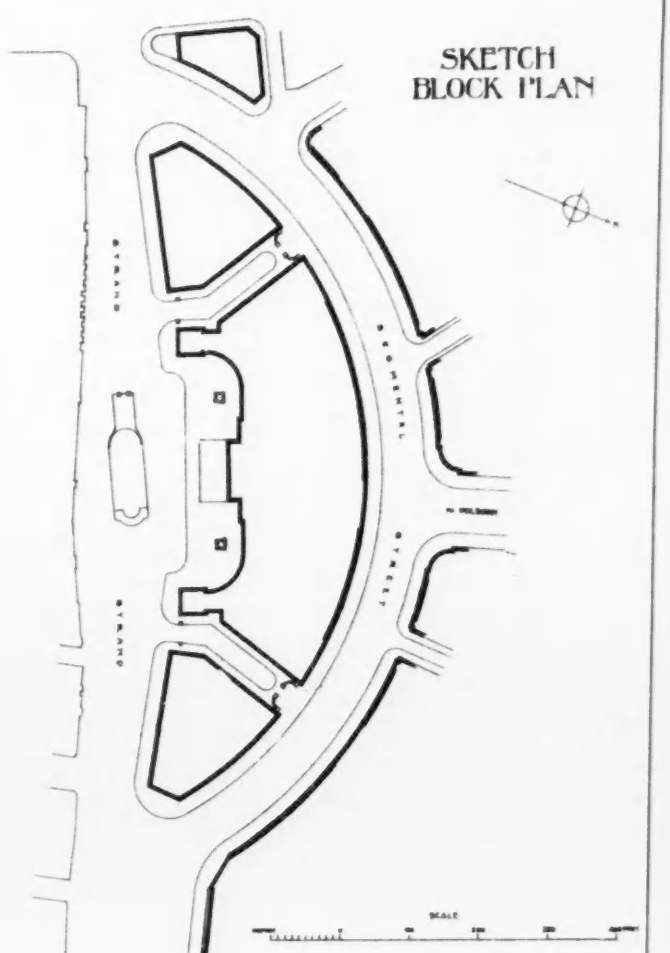
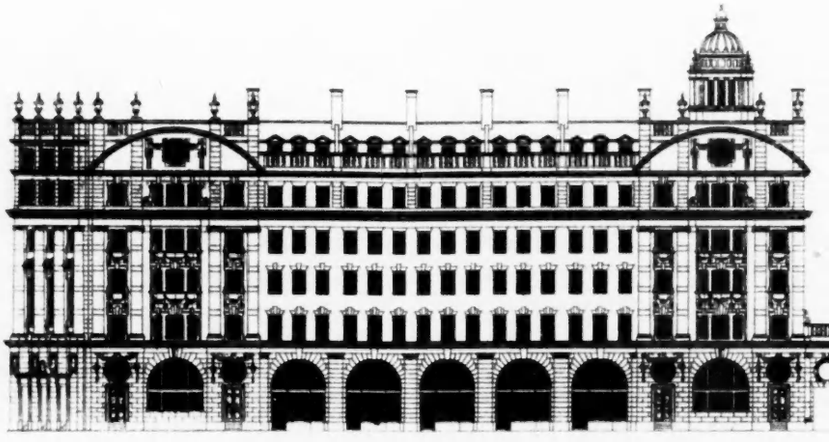


PHOTO-LITHO. SPRAGUE & Co LTD 4 & 5 EAST HARDING STREET, FETTER LANE, E.C.



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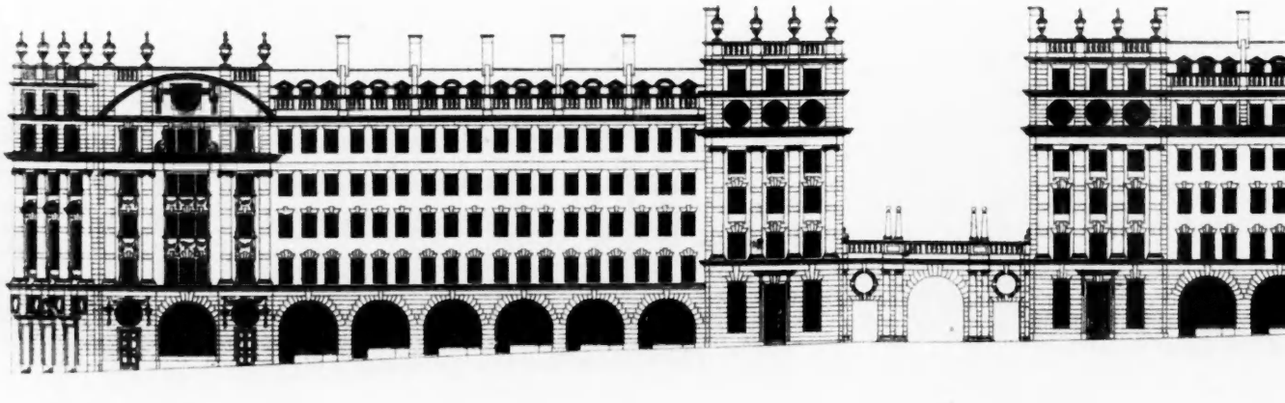
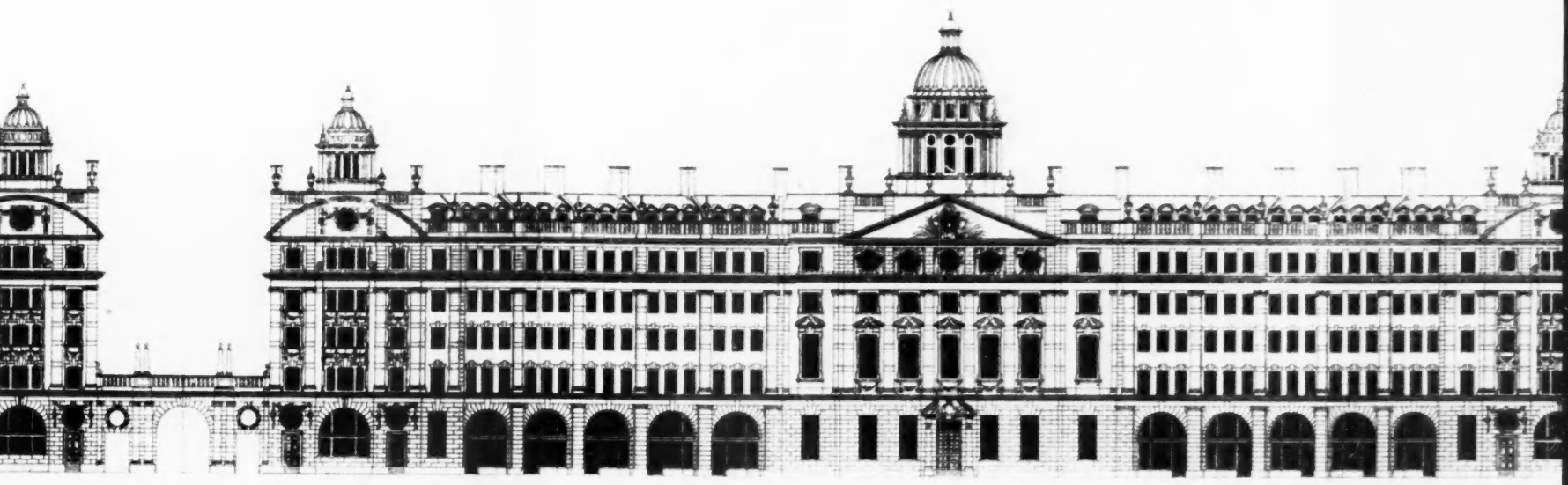
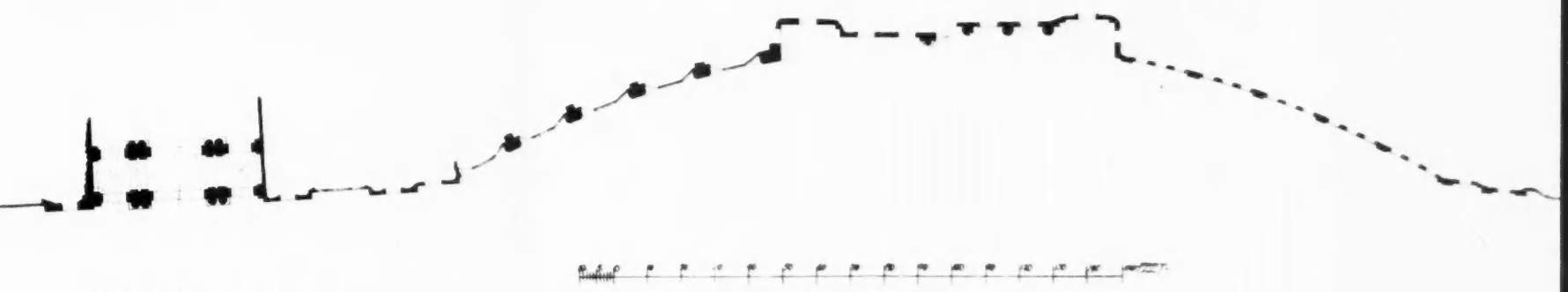
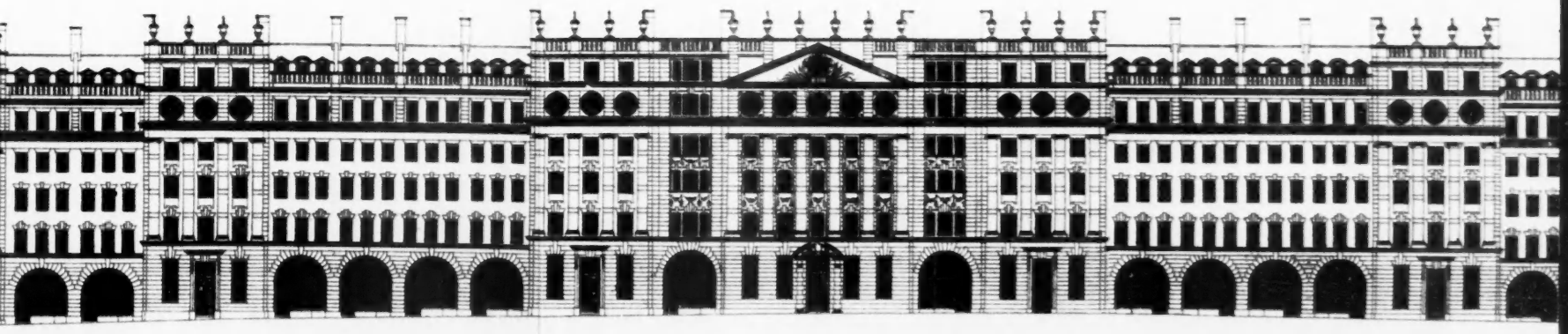




ELEVATION OF THE FRONTAGE NEXT THE STRAND.



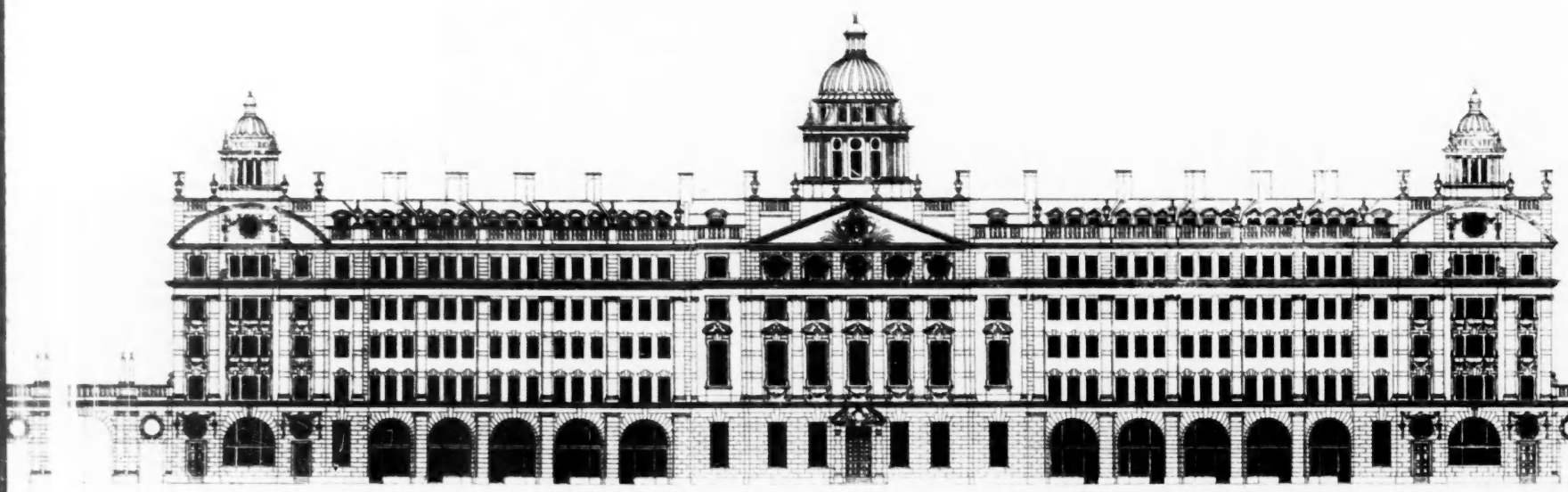
GROUND FLOOR PLAN.



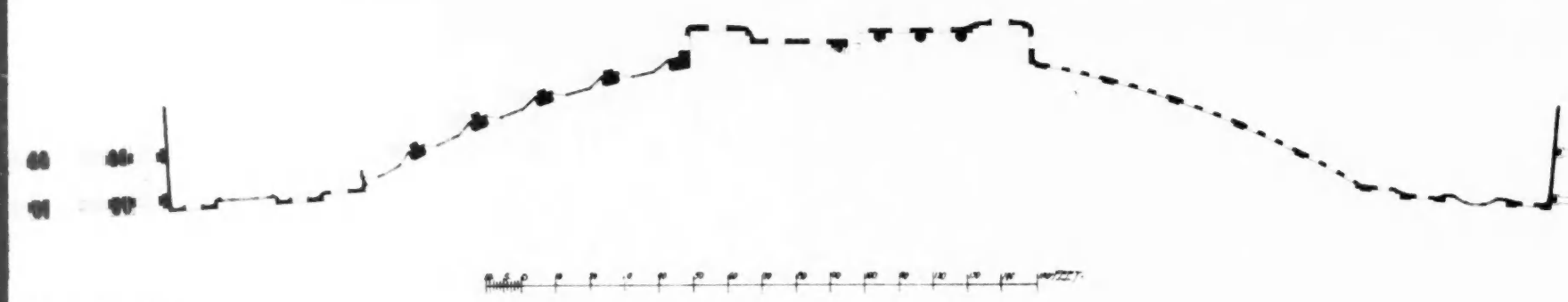
AXIS LINE OF NEW ROAD

ELEVATION OF SOUTH SIDE OF CRESCENT STREET BETWEEN WELLINGTON STREET AND CLEMENTS' INN.

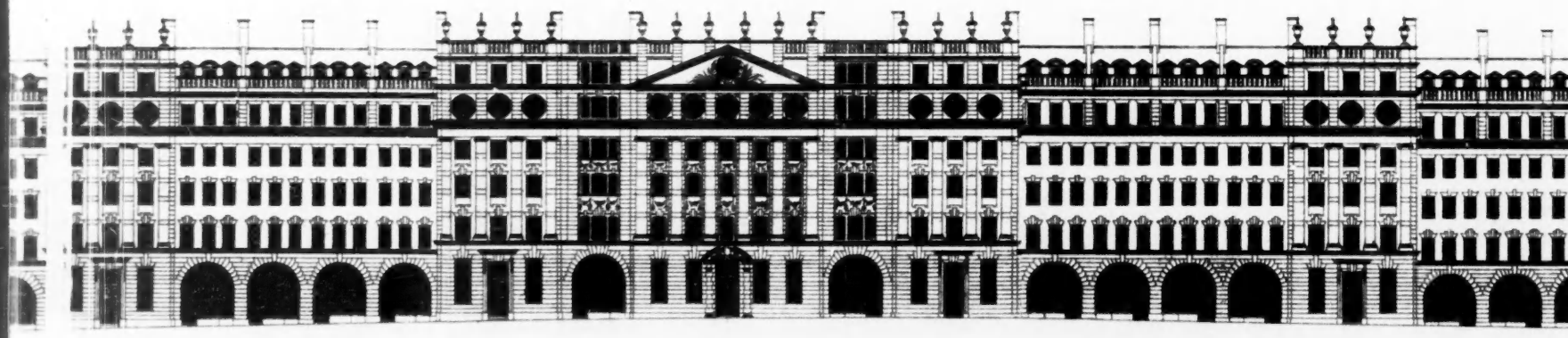
DESIGNS FOR NEW STREET ARCHITECTURE FOR THE LONDON COUNTY COUNCIL.—Design No. 21.



ELEVATION OF THE FRONTAGE NEXT THE STRAND.



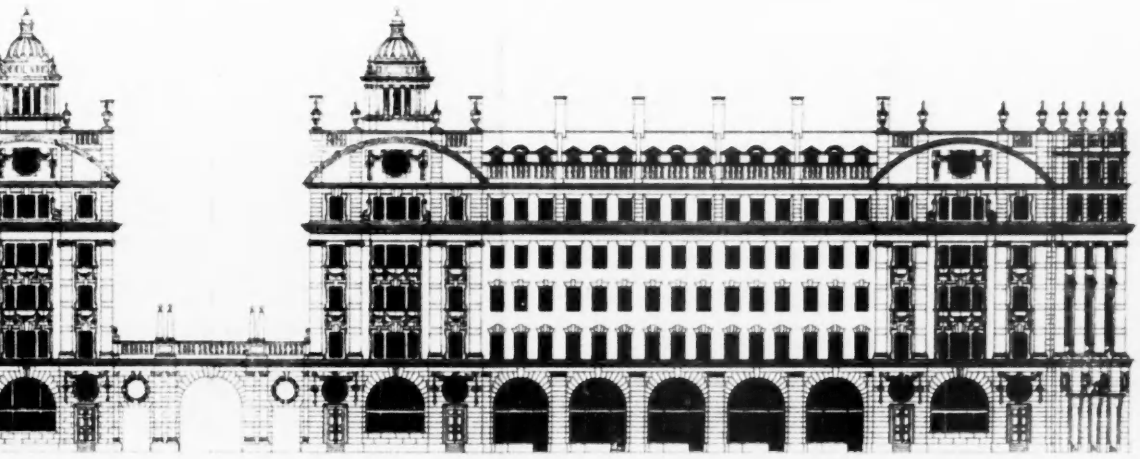
GROUND FLOOR PLAN.



AXIS LINE OF NEW ROAD

ELEVATION OF SOUTH SIDE OF CRESCENT STREET BETWEEN WELLINGTON STREET AND CLEMENTS' INN.

DESIGNS FOR NEW STREET ARCHITECTURE FOR THE LONDON COUNTY COUNCIL.—DESIGN No. 21.



FIRST FLOOR PLAN.

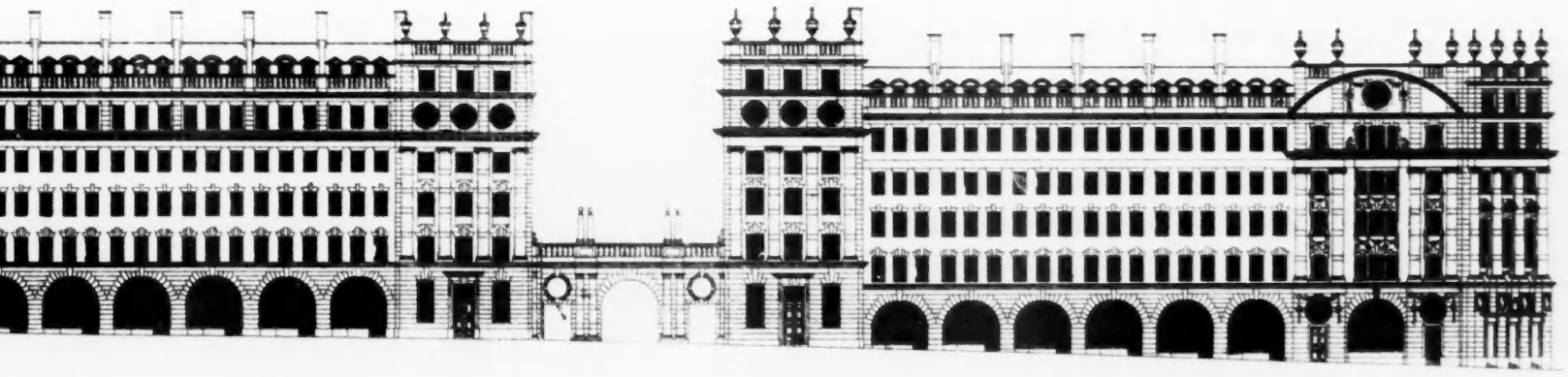
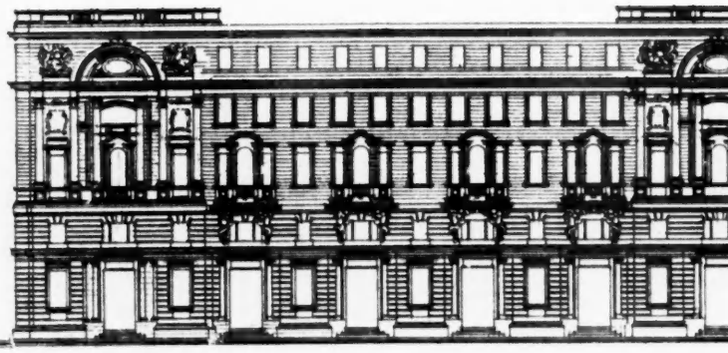
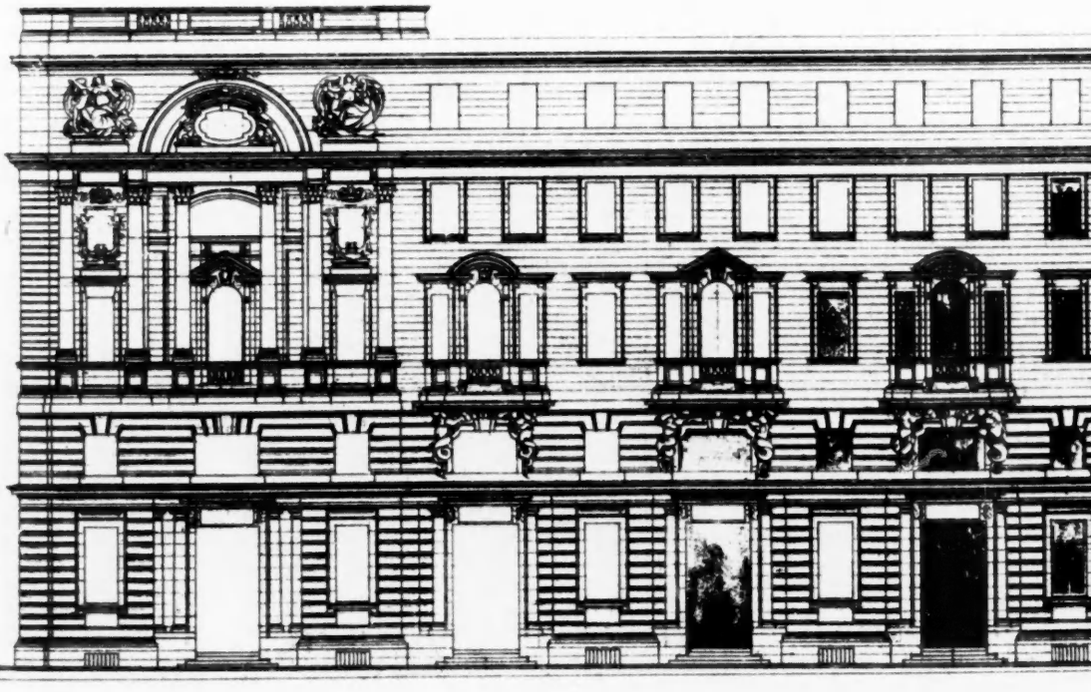
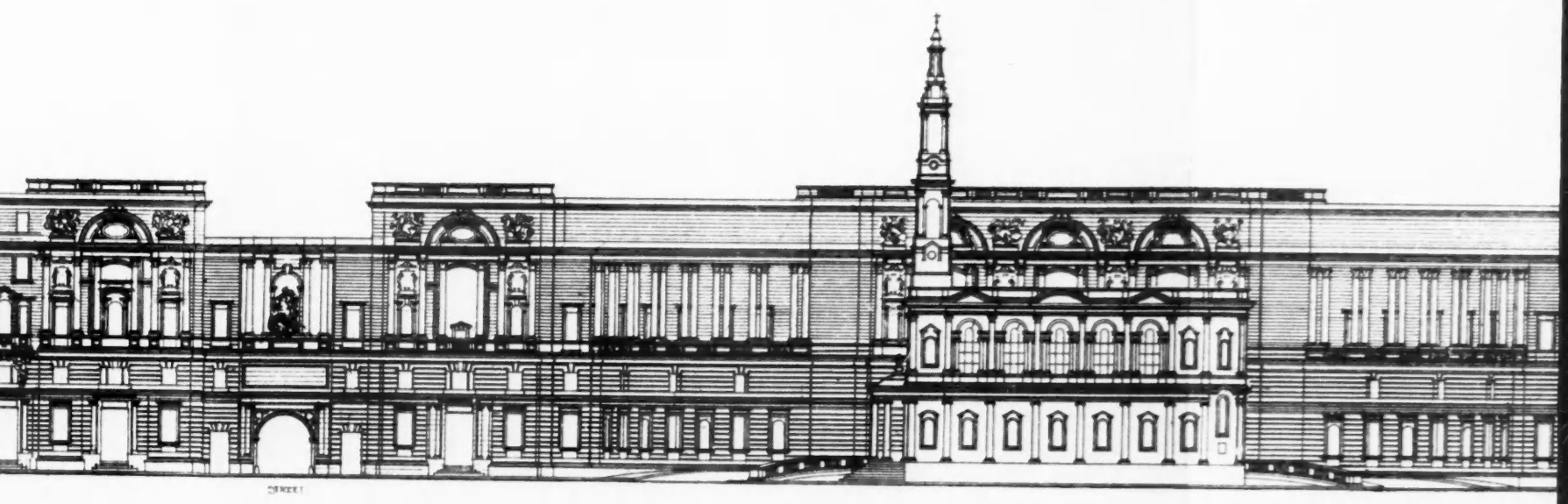


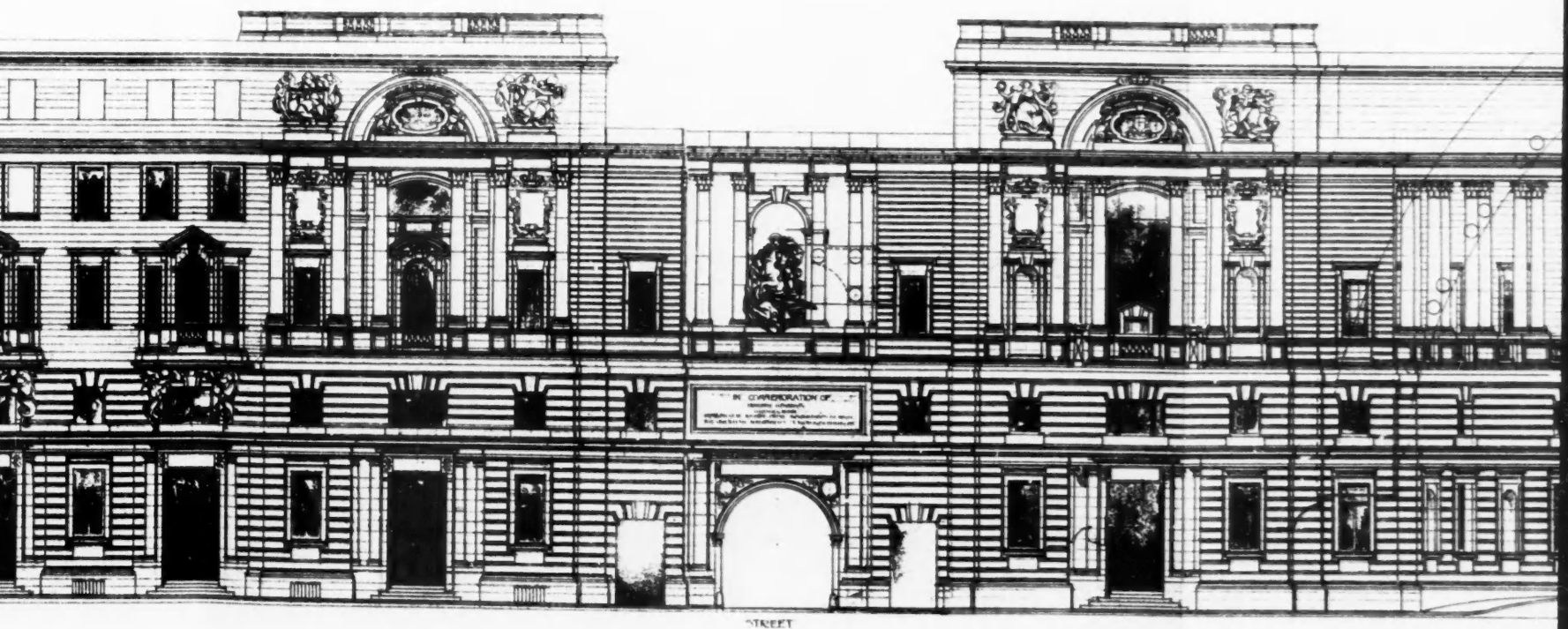
PHOTO LITHO SPRAGUE & Cº LTD 4 & 5 EAST HARDING STREET, FETTER LANE, E.C.





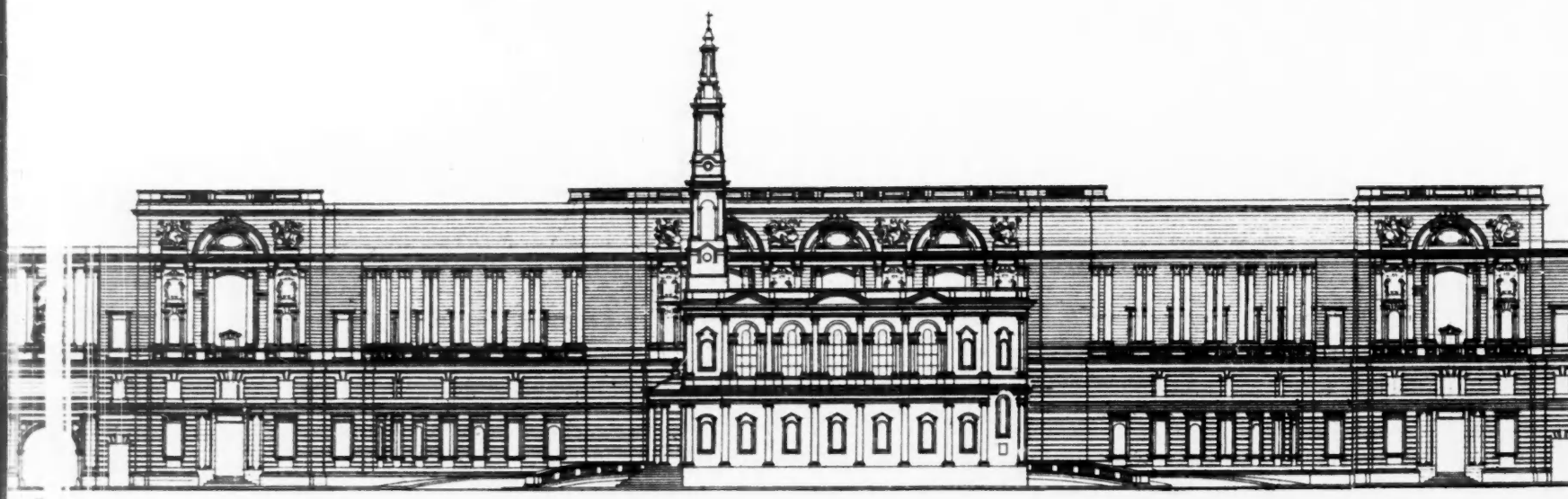


STRAND FRONTAGE.

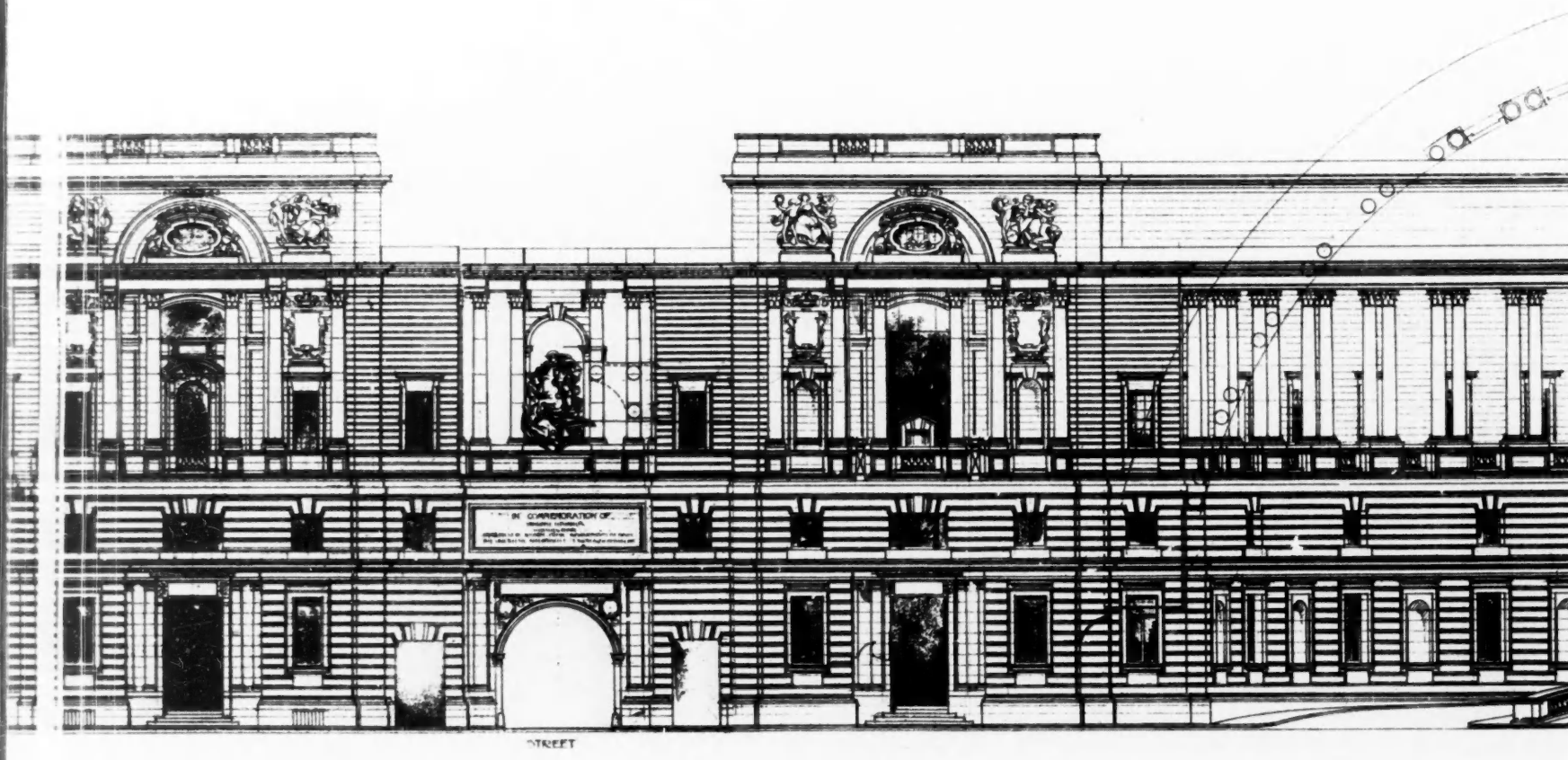


STRAND FRONTAGE.

DESIGNS FOR NEW STREET ARCHITECTURE FOR THE LONDON COUNTY COUNCIL.—DESIGN No. 29

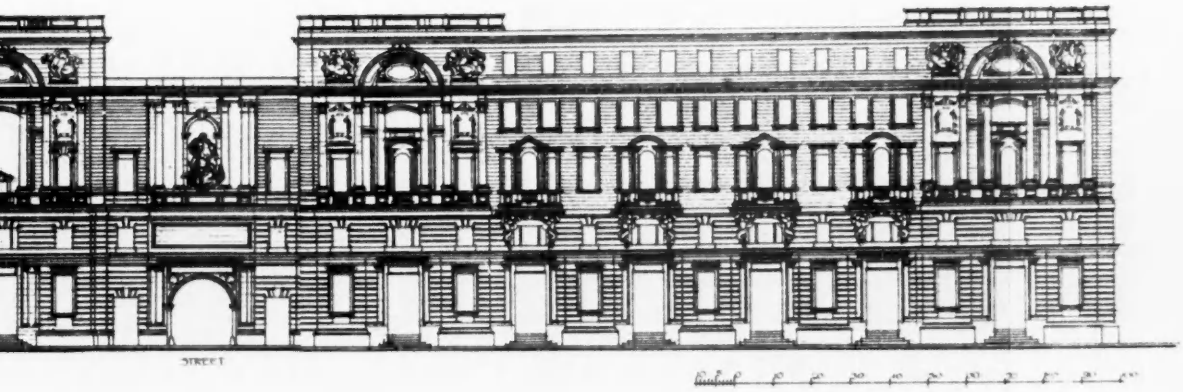


STRAND FRONTAGE.



STRAND FRONTAGE.

DESIGNS FOR NEW STREET ARCHITECTURE FOR THE LONDON COUNTY COUNCIL.—Design No. 29.



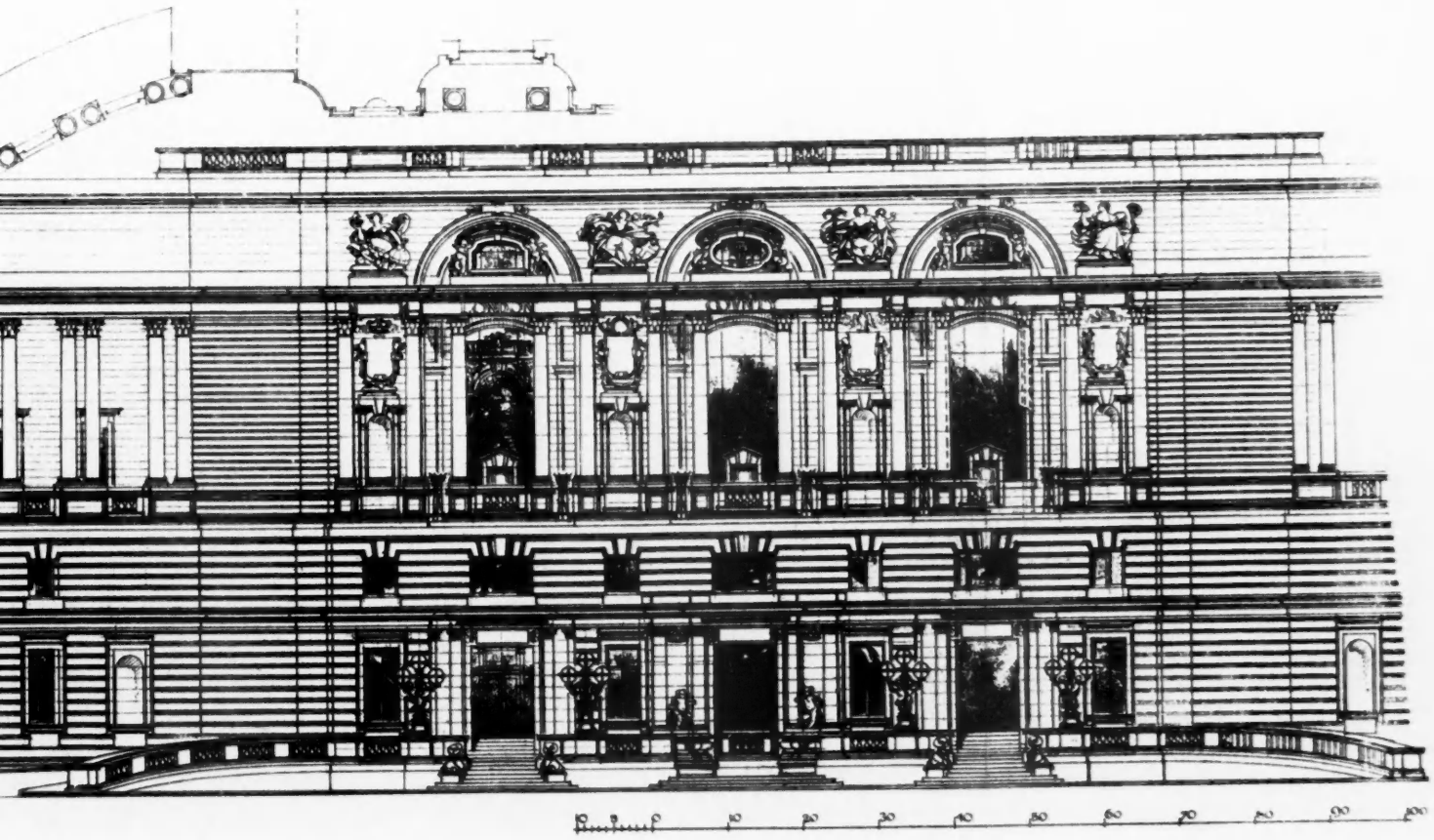


PHOTO LITHO. SPRAGUE & Co. LTD. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

terest; in spite of the dictum of Vitruvius, it is mean and humble, the uniformity of the size of the bricks and their smallness have this effect, but the interest and beauty of finished brickwork is very great. The mortar which embeds and encloses each brick unit, the bonding, regularity, and evenness of the whole, composed of so many units, are each factors of interest. The mortar or cementing material plays a much more important part than in the wall of masonry. Together with the bricks, it forms a concrete amalgam rather than a structure of squared blocks. This character can be readily seen in the remains of Roman brickwork in England, notably in the fine wall at Leicester. Mediæval and Elizabethan brickwork has much the same effect, the mortar joints being broad, but the work of the Georgian period witnesses a change of feeling. A finer quality of brick, suitable for carving and moulding into architectural forms, was largely used, and with it a fine and delicate mortar joint, the amount of mortar revealed on the surface of the wall being of the smallest possible extent. This work has more the characteristics of minute masonry. The bonding and planning of the courses of bricks became of great importance with the decline of mortar, the strength of such walling being dependent on the distribution of the weight and thrusts on the body of each brick, and not on its joints, the adhesive quality of the mortar being not a constructive consideration. Modern brickwork is a practical compromise between the mediæval and Georgian methods; the mortar joint is neither thick nor thin, and consistent bonding is often neglected, the use of powerful mortar being expected to make amends for it. In brickwork there is scope for fine handicraft and much human interest, and even a garden wall may be rendered beautiful and have character. The quality of texture and surface, which is valuable and important in all great work, can be imparted by a sympathetic study of even brick and mortar; the sympathy with the material that he uses will prevent an architect from lapsing into anachronisms in designing features unsuitable for execution in brickwork, and also provide the student with a new stimulant to the enthusiastic study of the elements of fine buildings.

EDINBURGH ARCHITECTURAL SOCIETY.—A meeting of this Society was held on the 7th inst. in Dowell's Rooms. Mr. W. J. Blain, Glasgow Architectural Association, gave a lecture on "Some Scottish Houses," in which he described and compared the houses of the Dee and the Don—Drum House, the Castles of Crathie, Craigievar, Midmar, and Castle Fraser.

BRISTOL SOCIETY OF ARCHITECTS.—The ordinary monthly meeting was held on Monday at the Fine Arts Academy, Mr. Joseph Wood, vice-president, in the chair. Mr. Harold Smith, lecturer on architecture at the Merchant Venturers' College, delivered an address on "The Architects of the Court and Capital of England in the Seventeenth Century." The speaker first dealt with the Renaissance of the Elizabethan and Jacobean periods, showing how it eventually culminated under the patronage of the Court in the work of Inigo Jones. He then spoke of the effect of the civil war, and pointed out that most of the artists of the Restoration were foreigners. After a description of the capital as it was in the seventeenth century, he concluded by describing the work of Sir Christopher Wren in restoring the City, building St. Paul's, and adding to Hampton Court and Greenwich Hospital. The paper was illustrated by numerous photographs, shown by means of the lantern, and also an interesting collection of prints relating to work of the period.

ARCHÆOLOGICAL SOCIETIES.

ROYAL ARCHÆOLOGICAL INSTITUTE.—At the general meeting on the 7th inst. of this Institute, Sir Henry Howorth, President, in the chair. Mr. H. S. Cowper exhibited a collection of over 200 objects purchased during a journey in North Africa, Egypt, and Asia Minor last winter. They included stone and bronze figures, terra-cottas, gems, rings, and coins, weights, scarabs, and beads, and stone and bronze implements. Among the early and prehistoric things were a curious perforated stone mallet, possibly a weight adapted for this purpose; an earthenware figure of the Trajan "owl-face" idol type from Adalia; and a sard seal from Aleppo with a highly convex surface covered with characters believed to be Hittite. The most interesting object in the collection was a stone figure of Amasis, 19 in. high, and in perfect condition. This is of extreme rarity, and was acquired close to Sais, in the Delta. An early cylinder of apparently the First Dynasty, acquired in the Fayum, seems to contain a reference to the "Lake" at that early date; and there were a few good bronze figures. The gems were numerous, the finest being a chalcedony scaraboid with the type of Aphrodite robing, of fourth-century work; an early scarab with a sow; an agate with Scævola before L. Porsena; and a largish nicolo with a beardless Jupiter. Two fine examples of the Cyrenaic gold staters with the name of Golantheus were among the coins, and among other Greek objects of interest may be noticed an Aryballos in the shape of a maiden's head, of archaic sixth-century work; a Greek lamp from Cyrene with a head of Silenus; and several very pretty terra-cotta female heads of fourth or third century work from Naucratis. A leaden sling stone from Rhodes has the inscription BABYPTA. In a paper entitled "Miscellanea Heraldica," by Mr. J. Lewis André, F.S.A., the reader pointed out the great influence possessed by the science of heraldry during the latter part of the Middle Ages, and its extensive employment in architectural decorations. Several curious armorial bearings and the fabulous explanations of them were noticed, and the use of the savage man, or "woodhouse," in heraldry, art, and ceremonial was discussed at some length. It was pointed out by examples from his plays that Shakespeare took for granted a fair knowledge of heraldry in his hearers or readers. The paper concluded by noticing the value set by the Sussex family of Pelham on their badge of the buckle, and by that of the Percies on their motto "*Esperance en Dieu*." Messrs. Green, Brabrook, and Allen Browne took part in the discussions.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—The session 1900-1901 commenced on Wednesday evening the 7th inst., when a meeting was held under the presidency of Dr. W. de Gray Birch, at the rooms in Sackville-street, Piccadilly. A most interesting lecture was given by Mr. Newstead, the curator of the Grosvenor Museum at Chester, upon the Roman remains recently discovered in that city. The lecture was illustrated by photographs of the various objects found and the sites of the several discoveries. Within the past two years extensive alterations have been carried on within the boundaries of the city of Chester, which have yielded very many relics of the Roman occupation. One of the most important architectural relics of ancient Deva was discovered in the summer of 1898, and consisted of a semicircular structure composed of brickwork and masonry, resting upon a floor of thick concrete and large tiles; the inner surface was covered with three grades of plaster, the first being finely-powdered brick, the second chiefly of coarse sand, and the third a finishing coat of finely-ground quartz. The site of the building is in Godstalls-lane (off Eastgate-street, North), and the depth at which the remains were found is 8 ft. 11 in. Mr. Newstead considers the structure was probably a lararium. Close alongside was found a wooden spade, similar to those used by the Romans in their mining operations. East of this structure, but at a higher level, was a rough concrete floor made of fragments of Roman roofing-tiles faced with cement, and upon this floor were quantities of fine charcoal and many slips of waste sheet bronze, two bronze fibulæ of the harp-shaped type, and a curious implement, somewhat resembling a "bit" used by a modern joiner. One of the most interesting things here discovered was a slip of bronze with a buckle-shaped attachment, bearing the motto in green and red enamelled letters, $\frac{\text{VTERE}}{\text{FELIX}}$. During the last three months extensive excavations have been made in the rear of premises in Eastgate-street, a few paces west of Godstalls-lane, which brought to light considerable traces of Roman work in a series of drains having a base of flat broad roofing-tiles with the sides and top of roughly dressed masonry. On October 9 last about 15 ft. of lead water pipes in differing lengths were dug out, portions of which bear inscriptions to Agricola. One of these inscriptions is on a raised band 3 ft. 10½ in. long by 2 in. broad, the letters practically filling the whole space, and is as follows:—"IMP. VESP. VIIII. T. IMP. VII. COSCN. IVLIO AGRICOLA LEG. AUG. PR. PR." The inscription was submitted to Mr. Haverfield, who considers the date to be A.D. 79, as Agricola governed Britain from A.D. 78 to A.D. 85, though the occurrence of Agricola's name on the pipes does not imply any special action or presence of his at Chester, but is due to the common method of dating. It is satisfactory to know that these most interesting relics of the Roman city have been preserved by Mr. Newstead's efforts, and have been presented by the owners of the property and the contractor for the works to the Chester Archæological Society. The various distances and depths, and the exact nature of the several localities at which all the relics were discovered, together with their relative positions, are all accurately recorded by Mr. Newstead, to whom a cordial vote of thanks was given by the meeting.

THE BUILDING TRADES' GIFT TO THE NATION:

HOMES FOR DISABLED SOLDIERS.

WE are asked to announce the following additional subscriptions which have come to hand:—

	£	s.	d.
The Building Trades of Walsall (per Mr. W. Wistance)	400	0	0
The Birmingham Master Builders' Association (per Mr. W. Sapcote) (third instalment)	100	0	0
Messrs. Holloway Brothers	51	10	0
The Nottingham Master Builders' Association (per Mr. W. J. Barton) (second instalment)	47	5	0
Workmen of Messrs. Holloway Brothers	23	2	1
The *Builders' Journal* Shilling Fund (second instalment)	14	17	9
The Employees of Mr. Walter Wallis (per Mr. A. Sweetman)	7	11	0
Mr. T. W. Heath and Workmen (Kensington)	3	3	6
Workmen of Messrs. T. Rider & Son	3	0	0
Mr. A. S. Turner and Workmen	2	12	0
Messrs. G. Candler & Sons and Workmen (Brixton)	1	18	9
Mr. C. Kibley and Workmen (Plumstead)	1	17	0
Workmen of Messrs. Barnes & Co. (Shoreditch) (third contribution)	1	17	0
Mr. Burkitt (per Mr. Robt. Neill)	1	1	0
The Yorkshire Federation of Building Trades' Employers (per Mr. W. R. Thompson)	0	17	6
Messrs. H. Stevens & Co. (Southampton)	0	5	5
Messrs. M. & E. Whewell (Blackburn)	0	0	0

The foregoing list was sent for publication last week, but received too late. Since then we have received the following further list of donations:—

	£	s.	d.
Manchester Master Builders' Association	65	0	0
Mr. Warburton (Manchester)	20	0	0
Longridge Master Builders' Association	9	0	0
Workmen of Messrs. Perry & Co.	34	13	0

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of this Council was held on Tuesday in the County Hall, Spring-gardens, Alderman Dickinson, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee, it was agreed to lend the Hampstead Guardians 2,005*l.* for the erection and equipment of laundry and boiler house, and for the installation of electric light at their workhouse; and the Metropolitan Asylums Board 75,000*l.* for the erection and fitting of an Asylum at Tooting Bec.

Works Department.—The same Committee reported as follows:—

"The Works Accountant has reported to us with reference to the necessity of altering the percentages to be added to the cost of estimated works to cover general and establishment charges. The percentages added to works completed since March 31, 1900, were provisionally fixed at 2¼ per cent. for general and 3¾ per cent. for establishment charges, making 6 per cent. in all. The estimated expenditure on works for the year 1900-1 is 300,000*l.* There has been some rearrangement of the charges as between 'General' and 'Establishment,' and in order to cover these charges the accountant now estimates that the percentages should be 2 per cent. and 4½ per cent. respectively, making a total percentage of 6½ per cent. We have accordingly fixed these percentages to be added to the cost of estimated works completed in the six months to March 31, 1901."

Mr. Beachcroft said he understood that the estimated expenditure for the current year was 300,000*l.*, while last year he believed it was 370,000*l.* He would like to know whether there was any prospect in the shape of references for the Council to justify the hope that the Works Department would be supplied with sufficient work, or was the Council innocently or ignorantly starving the department.

Mr. Bruce, Chairman of the Committee, replied that up to the end of the year there was ample work for the Department, and

whether more was given would depend on the Council's Committees and the Council itself.

Colonel Ford said they knew that the Works Department depended for success on the amount of work given to it, and the tendency seemed to be to reduce that work.

Street Improvement.—The Improvmeents Committee recommended, and it was agreed :—

"That, notwithstanding any previous resolution of the Council, the application to Parliament for powers to widen Scrubb's-lane, Brook Green-road, and Fulham Palace-road, sanctioned by the Council on July 31, 1900, be made in general accordance with the plan approved by the Improvements Committee on October 31, 1900."

The Water Question.—After a long discussion and the defeat of two amendments, the following recommendations of the Water Committee were carried :—

"(*a*) That a bill be promoted in the Session of 1901 for the purchase by the Council of the undertakings of the eight metropolitan water companies.

(*b*) That it be referred to the Parliamentary Committee to prepare and present to the Council the necessary Bill for carrying out the above recommendation, and also the necessary Water (Finance) Bill."

The Housing Question.—The Housing of the Working Classes Committee brought up the following report :—

"The Council on October 23, 1900, passed the following resolution :—'That it be an instruction to committees to confer with the Housing Committee before bringing up to the Council any proposal the carrying out of which would involve the displacement of twenty or more persons of the labouring classes, and in all cases where the displacement of any such persons is involved, to state in their report what action is proposed with a view to provision being made for the re-housing of such persons.' In connexion with the above resolution, our attention has been directed by the Building Act Committee to an application made to that Committee by Mr. H. H. Collins on behalf of Messrs. Davis Brothers for consent to the formation of a street to lead out of the north side of Bethnal Green-road, and also for consent to the widening of Blyth-street and a portion of old Bethnal Green-road. It appears that by the proposed scheme, 216 small houses occupied by persons of the working class will be cleared away. On the basis of each house containing on an average four rooms, and calculating two persons per room, it may be estimated that 1,728 persons of the working class will be displaced by the execution of the scheme. The application states that 141 houses will be erected to front on Blyth-street and on the proposed new street, and taking each house to be three stories in height and to contain six rooms, accommodation will thus be provided for 1,692 persons, leaving a balance of thirty-six persons displaced who will not be provided for in the new dwellings. . . . . Having regard to the fact that the application is made on behalf of private individuals who are under no statutory obligations to make provision for persons of the working class whom they displace, we are unable to advise the Council to take any action in the matter. The scheme appears to be a satisfactory one in other respects, and we propose to watch its development. . . . . "

The Committee also brought up the following report :—

"We report, for the information of the Council, that since March 31 last the following working-class dwellings have been completed, and are now occupied :—

Name of Buildings.	Date of First Letting.	Number of Persons Accommodated.	Estimated Cost (land and buildings).
	1900.		£
Holmwood-buildings, No. 97, Southwark-street	April 2	72	5,444
Benson-buildings, Hedsor-buildings, Abingdon-buildings, Laleham-buildings } Boundary-street area	„ 9	180	11,814
	„ 16	410	23,683
	May 7	360	23,046
	„ 14	380	21,111
Murphy-buildings, Gardiner-buildings, Hunter-buildings, Cobham-buildings } Falcon-court, Borough, scheme	„ 14	400	29,495
	Oct. 22	278	
	...	...	15,464
	...	...	
Millais-buildings, Leighton-buildings } Millbank estate	June 25	120	15,064
	July 23	120	
Cranford-cottages, Brook-street, Limehouse scheme	„ 16	108	5,325
	Total	2,428	150,446

Another block of buildings on the Millbank estate, viz., Romney-buildings, accommodating 290 persons, will be completed and ready for occupation within about ten days from this date.

Before the dwellings are occupied we have arranged for the block to be opened to inspection by members of the Council and their friends on Monday, 19th inst. It should be mentioned that Romney-buildings have been completed in five months, and Cobham-buildings two months before the specified time, and we think that the expeditious manner in which these works have been carried out by Messrs. Holloway Bros. and the Works Department respectively reflects great credit on the contractors and that Department. . . . . "

Temporary Structures. — The Building Act Committee brought up the following report :—

"In our report, dated October 15, 1900 (presented to the Council on October 23), we stated that we had arranged for the issue to the occupiers of premises on the line of route of the march of the City Imperial Volunteers, of notices, calling attention to the necessity of the Council's licence being obtained in respect of temporary structures proposed to be erected, and also to the necessity for shoring up balconies intended to be used for the accommodation of sightseers. We have now to report that 128 applications were made for the Council's licence. Of these ninety-six were granted, two were refused, six were received too late for consideration, and twenty-four, not being in order, were returned to the applicants. In addition to these, sixty-eight structures were erected without the Council's licence, the attention of the Council being called thereto by the District Surveyors. In each of these cases the owners were informed of the illegality of their action, and cautioned as to their liability in case of accident. Fortunately no such accident occurred, but we consider that the matter should not be allowed to rest here, and with a view to preventing the erection of structures of this kind on future occasions, we have instructed the Solicitor to take proceedings, if possible, for the recovery of penalties from the owners of all structures which were erected without the Council's licence. Requisitions to survey what appeared to be dangerous structures were sent to the District Surveyors in sixty-eight cases, in twenty-two of which it was found necessary to serve notices to take down or secure the structures. In the majority of the other cases the structures were secured by shoring. In three instances wooden structures were removed by the Council's officers on the day of the procession owing to the construction being unsatisfactory. The measures taken by the Council at the time of the Diamond Jubilee procession in regard to the shoring of balconies seem to have had a beneficial effect, and in only one instance did the owners refuse to carry out suggestions made by the Council's officers where balconies were inefficiently shored or structures hurriedly erected without the Council's licence."

Having transacted other business the Council adjourned.

APPLICATIONS UNDER THE 1894 LONDON BUILDING ACT.

AT the meeting of the London County Council on Tuesday the following applications under the 1894 Building Act were considered. Those applications to which consent has been given are granted on certain conditions. Names of applicants are given in brackets. Buildings are new erections unless otherwise stated :—

Projections.

Hampstead.—A porch at the entrance to a building known as Broadhurst Mansions, on the south side of Broadhurst Gardens, Hampstead (Mr. G. W. Booth for Messrs. G. Trollope & Sons).—Consent.

Lewisham.—A projecting lamp over the entrance to the Salisbury public-house, High-street, Lewisham (Mr. A. L. Guy for Mr. C. Hutchinson).—Refused.

St. Pancras, West.—A bay on the flank of No. 10, Cambridge-terrace, Regent's Park, St. Pancras, to abut upon Cambridge-place (Mr. W. D. Carée for the Misses Barron).—Refused.

Strand.—An iron and glass shelter at the entrance to the new grillroom at the eastern end of Prince's Restaurant, Piccadilly (Messrs. J. T. Wimperis and Arber for the Prince's Hall Restaurant Company).—Refused.

Width of Way.

Hackney, South.—Five houses on the west side of Brookfield-road, Hackney, with the forecourt fence at less than the prescribed distance from the centre of the street (Mr. W. L. Beurle).—Consent.

Formation of Streets.

Bethnal Green, South-West. — That an order be issued to Mr. Collins, sanctioning the formation or laying out of a new street for carriage traffic to lead from Bethnal Green-road to Old Bethnal Green-road, Bethnal Green, and the widening, in connexion therewith, of Blythe-street and a portion of Old Bethnal Green-road (for Messrs. Davis Brothers). That the name Teesdale-street be approved for the new street.—Agreed.

Cubical Extent.

Greenwich.—The erection at Enderby's Wharf, River-side, East Greenwich, of a building to exceed in extent 250,000, but not 450,000, cubic feet, and to be used only for the purposes of the manufacture and storage of telegraph cables (Mr. F. R. Lucas for the Telegraph Construction and Maintenance Company, Limited).—Consent.

Finsbury, East.—The erection on the south side of Little Arthur-street, Golden-lane, City, at the corner of Hot Water-court, of a building to exceed in extent 250,000, but not 450,000 cubic feet, and to be used only for the purposes of the trade of a shirt-maker. (Mr. J. O. Cook for Messrs. J. James & Co.).—Refused.

Deptford.—The erection at the London Joinery Works, Rollin-street, Canterbury-road, Deptford, of a building to exceed in extent 250,000, but not 450,000 cubic feet, and to be used only for the purposes of a timber-sawing, planing, moulding, and framing mill. (Mr. W. H. Brown for Messrs. Farquharson Brothers & Co.).—Refused.

Islington, West.—A van factory on the north side of Albert-mews, York-road, King's Cross, to exceed in extent 250,000, but not 450,000 cubic feet, and to be used only for the purposes of the trade of building and repairing vans. (Messrs. Potts, Son, & Hennings for Messrs. Herbert Clarke, Limited.—Refused.

BOOKS RECEIVED.

THE CASE LAW OF THE WORKMEN'S COMPENSATION ACT. By R. M. Minton-Stenhouse. Second Edition. (Effingham Wilson.)

ARCHÆOLOGIA ÆLIANA: Vol. XXII., Part 2. (Andrew Reid & Co.)

Correspondence.

***To the Editor of* THE BUILDER.**

THE STATISTICS OF SAXON CHURCHES.

SIR,—Will you allow me this opportunity of saying how grateful I shall be if any of your readers familiar with our old churches will kindly send me an intimation of any signs of pre-Conquest work other than those mentioned in my list. What is most valuable, of course, is some distinctive mark, and not merely a general appearance of high antiquity, or such neutral features as plain tower or chancel arches. The catalogue now offered is a provisional one, and I shall receive with pleasure any corrections or suggestions which your readers may be good enough to send to me.

G. BALDWIN BROWN.

The University, Edinburgh.

A LONDON STREET IMPROVEMENT.

SIR,—Referring to the Note in a recent issue of the *Builder* relative to the intention of the London County Council to apply for Parliamentary powers to widen Central-street, St. Luke's (connecting Old-street and City-road), this would, if granted, materially assist a scheme which I am putting forward for the formation of a direct thoroughfare from south to north.

A committee of the Corporation of the City of London is now considering the best means of rendering Southwark Bridge more useful for vehicular traffic, as, chiefly on account of the steepness of its approach on the north side, it is of little value at present. I have long advocated the importance of forming a viaduct from the Bridge passing in a north-westerly direction, crossing

Upper Thames-street and debouching into Queen Victoria-street opposite Bread-street which would be practically on a dead level. By the widening of Bread-street and Wood-street, or the formation of an entirely new street a little to the west, the route would be continued through Red Cross-street, Golden-lane (which are both widened), and Central-street to the City-road; and a very inexpensive widening of streets opposite would lead to Islington Green, near the Agricultural Hall. In this way a direct thoroughfare *viâ* the Elephant and Castle and Dover-street would be obtained from the south and south-east to the north and north-east.

Among the advantages of this route would be the following. The lessening of vehicular traffic on London Bridge, and the easement of the streets around the Mansion House, and especially Cheapside. By the viaduct the traffic westward would pass through Cannon-street and St. Paul's-churchyard to Newgate-street, which is now being widened. The widened streets between Queen Victoria-street and Fore-street would give a communication north and south from Cheapside, as all the streets are at present narrow and generally choked with vans. There would be the saving of a mile from Southwark Bridge to Islington Green; and the easier gradients would form an excellent tram route and relief to the terminus in Moorgate-street, and also an easement to the traffic at the Angel, Islington.

Outside the City, with the widened Red Cross-street, Golden-lane, and Central-street, the cost of extending the street to Islington would be very small, as the value of the frontages would go a long way towards recouping the cost of the property taken.

On the south side all the thoroughfares are wide and the approaches to the bridge are not so steep as those on the north, and these could be reduced. The construction of the streets in the City would, of course, be an expensive matter; but as there can be no doubt of this being a Metropolitan improvement, the London County Council might reasonably be expected to contribute its share of the outlay, and the value of the frontages to the new street would materially lessen the cost.

Some such scheme as this is absolutely necessary, and must come sooner or later; and no time can be better than now, whilst the improvement of Southwark Bridge is under consideration.

J. Douglass Mathews, F.R.I.B.A.

BELFAST ASSEMBLY HALL COMPETITION.

Sir,—About a year ago the Presbyterian Church of Ireland advertised for designs for their new Assembly Hall and Central Offices. The designs were sent in on March 12 last, and the assessor awarded the first premium (100*l.*) to my design; the second premium (50*l.*) to Messrs. W. Hemstock & Son, of Leeds; and the third premium (25*l.*) to Mr. Wm. C. Laidlaw, of Edinburgh.

I am now informed that the Committee decline to accept any of the designs submitted in the competition, and have appointed Messrs. Young & Mackenzie, of Belfast, to carry out this work.

I understand that Messrs. Young & Mackenzie advised and assisted the Committee in the preparation of the competition, and as these gentlemen evidently possess the entire confidence and support of the Presbyterian body, I think it is much to be regretted that they were not entrusted with the work at the outset, thus obviating the waste of much time and energy on the part of the unfortunate competitors.

I am unable to illustrate my design, as the Committee retain my drawings and refuse to lend them to me for the purpose of publication.

Rupert Savage.

THE CURFEW.

Sir,—In your last issue of the *Builder* you have a report of a paper on "Church Bells," read before the Architectural Association Discussion Section, in which it is mentioned that considerable interest was taken in the reference made by the author to the ancient custom of ringing the curfew, and three places were mentioned where this still prevails during the winter months, viz., Hythe, Hitchin, and Gray's Inn.

In this ancient borough the curfew is rung not only in the winter months, but all the year round, with the exception of Sundays, Christmas-day, Good Friday, and any local holidays. The curfew is rung from 8 to 8.15 in the evening. Another bell is rung in this town at five o'clock in the morning from 5 to 5.15; it is called the workmen's bell, and is supposed to warn those whose duty it is to be at work at six in the morning that it is full time that they were out of their beds. These bells are rung in the Town Hall, and, curious to say, the bells in the Town Hall are the only bells which call the people to church on Sundays or any other Holy days.

On the induction of a new vicar to the parish, it is part of the vicar's duty, after he has been inducted in the parish church, to proceed to the Town Hall and personally to ring a peal on the eight bells. I hope you will pardon me from giving you this article, but I think it might be of interest to those who have not yet paid a visit to this ancient and loyal borough, which I am pleased to notice in any royal proclamation which is issued, in which it is stated that this proclamation is to be read "in the churches of Great Britain and Ireland and Berwick-upon-Tweed."

J. Lorimer Miller,
Architect.

Berwick-upon-Tweed.

A TRICK OF THE TRADE?

Sir,—On August 4 I advertised in your paper for a situation as junior assistant, and, amongst others, received a letter from a firm of architects in a provincial town asking for particulars, which I supplied them with at once.

On August 13 they wrote back saying they were not prepared to give the salary I asked. As it was barely enough to keep me, away from home, I replied saying that I should certainly not accept anything less than a sum I named, and thought that they must have misunderstood my application, thinking I wanted a situation as tracing clerk.

I did not expect to hear from them again, but, to my surprise, I received another letter on August 25, asking if I was still disengaged, and, if so, would I send them specimen drawings. I supplied them with these the following day. On September 4 they acknowledged these and said they would write me in a day or two.

The next letter, which I was to receive "in a day or two," arrived on September 22, in which they asked if I would have any objection to go to their branch office, and to residing there, and adding that they would be out of town for *a day or two*. However, I replied by return, so that it would be there when they got back, saying that I should have no objection to going there at all.

After waiting until October 1 for a reply, I wired to them saying that I must know something definite by return, and the next day I received a letter written, I presume, by the office boy, informing me that the principal was away at present in South Wales, but would return by the end of that week, when he would *at once* communicate with me. I do not know if the "principal" is still in South Wales, but he has not *yet* communicated with me, so I suppose he must be.

This, sir, is my first experience of seeking a situation, and I should be very grateful to you if you would make the facts known in your valuable paper for the benefit of all those seriously thinking of entering the profession. For my part, I think, after being articled five years, such treatment as this is rather disheartening.

Junior Assistant.

The Student's Column.

LESSONS IN ELECTRICAL ENGINEERING.

18. The Advantages and Disadvantages of High-pressure Supply — London County Council Regulations—Earthing the Middle Wire—Electrolytic Troubles.

THE Board of Trade Regulations originally fixed the maximum pressure of supply at a consumer's terminals as 300 volts continuous or 150 volts alternating. These regulations were revised in 1896, and the maximum pressure of supply, whether alternating or continuous, was fixed at 250 volts. About this time, also, several companies commenced to supply their consumers at pressures of 200 volts and some even at higher pressures. The advantage to the supply company of serving at these high pressures soon became obvious to electricians, and it is highly probable that supply at 100 volts pressure by a public company will soon become a thing of the past.

If we raise the pressure of supply from 100 to 200 volts, then, since energy is the product of current and pressure, it is obvious that we shall only require half the current and, therefore, mains of half the size to supply the same quantity of energy. As the cost of the mains is generally a large fraction of the total cost of the station, this is a very important saving. Another way of looking at it is to say that, if we double the pressure, then the same mains can supply twice as many consumers. In the above calculation we have supposed the same current density in the main, that is, that it will carry the same current at the two pressures. If we are only considering the heating of the main, this is a perfectly fair supposition to make, but in central station practice it is not the heating of the mains that fixes their size, but the drop of electric pressure due to their resistance. An ordinary electric supply main can carry three or four times the current flowing at its maximum load without undue heating, but in this case there would be an excessive drop in the pressure at a distance from the station. By the Board of Trade Regulations the drop of pressure in a distributing main must not be greater than 3 per cent. of the declared standard pressure. Hence it is this regulation that fixes the size of the mains.

If the resistance of the mains is R ohms, the current flowing in them C amperes, and the pressure of supply E volts, then the drop of pressure at their far end is C R volts. The percentage drop of pressure is $100 \frac{C R}{E}$. Now if we double the pressure of supply E, we must also double the current C if this percentage drop of pressure is to be the same in the two cases. Hence in the case of supply from central stations in a town, by doubling the pressure we can also double the permissible current, and thus quadruple the capacity of the mains. By raising the pressure of supply from 100 to 200 volts we quadruple the capacity of the copper mains of the supply company. If we raise the pressure of supply to 250 volts, the maximum permissible, then the capacity of the mains is increased $2{\cdot}5 \times 2{\cdot}5$, *i.e.*, 6¼ times. This explains why supply companies are so anxious to serve at high pressures.

We shall now consider this increase of pressure from the consumer's point of view. The advantages are that the company will probably charge him less if he take his current at the higher pressure, and that the cost of wiring his house will be slightly reduced. There may be a 10 per cent. saving in the total cost of the wiring owing to the lighter wires required.

The disadvantages are numerous. First of all, there is the much more unpleasant shock that can be got from the fittings. A 100-volt shock is hardly felt by most people unless their hands are very moist and make good contact. A 200-volt shock is felt by everybody and is often very unpleasant. In many cases, however, this is by no means the worst shock that can be got from the fittings. We have seen that in a three-wire continuous current system the pressure of the middle main from earth is sometimes considerable, and hence this has to be added on to the pressure of supply in order to get the pressure between the main connected to the positive outer and earth. For example, in a three-wire system the positive main may be at a potential of +400 volts, the middle at a potential of +150 volts, and the negative main at a potential of −100 volts. In those houses which are supplied from the middle and negative outer the maximum possible shock would be 250 volts, but in the other half of the houses supplied from the station there are wires the difference of pressure between which and the water or gas pipes is 400 volts. A shock at this pressure could easily be fatal. This is a serious drawback to the use of high pressures, and we shall consider below whether it can be eliminated by earthing the middle wire.

Another drawback is the necessity of having more expensive switches and fuses. Switches which will easily break a current at 100 volts will arc across at 250 volts, and there is a risk of serious damage being done. Again, double-pole switches, with a thin fibre separator between the positive and negative parts, such as are used on 100-volt circuits, are unsuitable for 200 volts, and are usually forbidden by the fire insurance companies. Similarly double-pole cut-outs are forbidden and two separate single-pole cut-outs must be used. Small cut-outs on 100-volt circuits often have a break of only 1 inch. The least-sized break at the higher pressures is 1½ inches. Special switch lamp-holders have to be employed, and the insurance companies insist that only the highest quality flexible wires are to be used.

Two hundred-volt lamps are dearer than 100-volt lamps; they are also larger and clumsier. The efficiency of the ordinary high-voltage lamp in the market is at least 10 per cent. worse than that of a 100-volt lamp. Its life is shorter, and as a rule it ought only to be used in a vertical position. The inferiority

of the 200-volt lamp might be got over by arranging two 100-volt lamps in series, but the drawback to this solution would be the complication of the fittings and the impossibility of having only one lamp burning at once. As low candle-power lamps can be had at 100 volts, the meter bill need not be increased by this arrangement.

In busy manufacturing towns like Glasgow, which have adopted a 250-volt service on the three-wire system, it is found that considerable inconvenience is caused in workshops and factories by the necessity of running two enclosed arc-lamps or five open arc-lamps in series between the mains. Hence it is difficult to practise those petty economies of turning off a lamp when it is not wanted which make electric lighting, comparatively speaking, cheap. It is possible to make an enclosed arc-lamp that will run on a 250-volt circuit, but it is found that such a lamp has a very poor light efficiency. The following are the results of experiments made by Mr. W. B. Sayers on various types of arc-lamps on the Glasgow circuit. He found that open-type arcs were twice as efficient for light-giving purposes as enclosed-type arcs and about three times as efficient as ordinary glow-lamps. He also found that a group of glow lamps taking the same energy as a 250-volt enclosed-type arc-lamp gave out three times as much light. This proves that a 250-volt enclosed-type lamp is of no commercial use for light-giving purposes.

The actual numbers Mr. Sayers found by his experiments are instructive and are given in the following table :—

	Open-type Arc.	Enclosed-type Arcs.		New Glow-lamps with Clear Globes.			
	5 in series.	2 in series.	1	16, 16 c.p.		31, 8 c.p.	
Current in amperes	10	4	2·75	4·4		4·5	
Watts	500 per lamp.	500 per lamp.	680	1,100	Reduced to 500	1,120	Reduced to 500
Relative luminosity	1,003	475	100	680	310	750	333

The necessity of having five open arc lamps in series on 250-volt circuits is not only a drawback because we have to turn on the five if only one be required, but also because one faulty lamp will affect the running of the other four. In large warehouses attempts have been made to get over the difficulty by having what Mr. Sayers calls a "ganger" switch-board. A separate pair of cables is run to every lamp, so it is easy at the switch-board to arrange that any five lamps in the warehouse can be put in series. A drawback is the necessity of having telephones or speaking-tubes at various convenient points to communicate with the switch-board attendant. Another solution, and in our opinion the only satisfactory one, is to have a rotary converter to transform the 250 volts into 100 volts or any other voltage that may be found most convenient for the type of arc lamp used.

The London County Council sought recently to impose severe restrictions before granting their consent to the City of London Electric Lighting Company raising the pressure from 100 volts to 200 volts in its Southwark area. They wanted the company to bear the cost of all the necessary changes in the house wiring, that it should change the lamps free of cost, that if the fire insurance companies raise the consumer's premium, then he should be entitled to deduct this amount from the payments he makes for electricity supply, and, most important of all, that they should lower their charge to the consumer by at least 15 per cent. When also three wires connected to the three supply mains are brought into a consumer's premises, then the middle wire should be split so as to make two pairs of undertakers' terminals at least 6 ft. apart. The reason of this restriction is to prevent the possibility of a 400-volt shock. For this reason also the London County Council seem to approve of earthing the middle main at one point.

In a good many towns in this country it has become the custom to supply alternating current at 200 volts. The gain by doing this is not so great as with direct currents, owing to the ease with which a pressure of an alternating current supply can be altered by means of a transformer. The London County Council usually make the stipulation before granting permission to an alternating current supply company to raise its pressure, that if a consumer desire to be served at 100 volts instead of 200, then the company have to fix at his house a transformer which will reduce his pressure from 200 to 100.

Owing to the great extension of electric traction in this country using a standard pressure of supply of 500 volts and the tendency to have one power house for traction and lighting, there will be many advantages in supplying the lighting circuit on a three-wire system with 500 volts between the outers. In this case the generators can supply the traction circuit by day and assist the lighting circuit at night-time. The loads will overlap to a certain extent, but this difficulty can be overcome by accumulators. The effect of adding a traction load to a lighting station will obviously be to level up what electricians call the load-factor, and greatly increase the output without much increasing the standing charges.

Another advantage from the supply point of view is that powerful motors can be operated at 500 volts, and it is found in practice that there is a large demand for them. When they are used certain additional precautions have to be taken. The mains leading to them should be concentric and armoured, or should be contained in steel pipes, the armouring or piping being connected to the earth. At 500 volts it is difficult to break the circuit owing to the arcing that ensues, hence special switches have to be used. In this case also magnetic cut-outs are preferable to those with fusible wire, as they are more certain in their action. Metallic covers are usually employed with motors, and it seems to us desirable that these covers should be earthed so as to prevent the possibility of any one getting a shock from them.

The question of earthing the middle wire of a supply system has not yet been authoritatively settled. It is, however, a question of great importance, and so we will consider the reasons for and against this procedure. When alternating current is transmitted at very high pressures it is convenient to use a concentric main, and to use the inner tube for the high pressure conductor, and connect the outer tube to earth at one or more points. As this makes the main absolutely safe, and alternating currents leaking through the earth do no damage and produce no disturbance to metallic telephone circuits, no objection to earthing is made in this case. With direct currents, however, the problem is much more difficult, owing to the "eating" or corroding action of direct currents on water or gas mains.

In the early days of electric traction in America great trouble was experienced owing to stray currents from the rails which, of course, conveyed the return current to the dynamos, corroding water, and other pipes. In the city of Brooklyn a large water main was perforated and pitted with holes thirty days after the opening of the electric tramway. Telephone cables, gas-pipes, &c., anywhere in the neighbourhood of the rails were also all badly damaged. Various expedients had to be adopted to prevent all this damage being done, and it is owing to this dangerous electrolysis that the Board of Trade in this country insist that the drop of volts along the rails of a tramway from one end to the other be not greater than seven. Even this pressure is regarded by some electricians as too high, as electrolysis will take place at much lower pressures. In some experiments recently made by Mr. Parshall on an electric tramway, it was found by cutting the track at the middle of the line and inserting an ammeter, that some 60 per cent. of the current was returning by the earth. We shall return to this question when discussing electric traction.

If no part of a three-wire direct current supply system be put to earth, it is found that the negative outer always gets nearest to the earth pressure. This happens, whatever system of mains we employ, whether bare copper strip on porcelain conductors or continually insulated cables, the negative outer is always nearest the earth pressure. The reason of this is probably electric osmosis, which causes moisture to travel from the positive conductor and towards the negative conductor. This improves the insulation of the positive conductor and lowers that of the negative. So strong is this action, that when the rubber insulating the negative mains is slightly porous, large blisters have been found in it full of liquid. We see, then, that the middle main, as a rule, is above the earth potential.

If we connect this middle main to earth we deliberately lower the insulation of the whole system and greatly increase the losses by leakage currents. The negative main with its feeble insulation resistance is now at −250 volts potential, and the small leakage current across the positive main is reduced as its pressure is lowered to +250. On the other hand, no one can get a shock greater than 250 volts from earth. Also all the three mains can be brought into a consumer's house without contravention of the Board of Trade regulations, and this is the consideration that appeals with most force to the supply engineer. The disadvantage from his point of view is that an "earth" on either outer produces a short circuit on one side of the system of distribution. As the first consideration of an engineer is to maintain the continuity of his system of supply this is a serious matter.

Most electricians think that it would be inadvisable to earth the middle wire at several points. When the system is out of balance there may be a considerable current in the middle wire, and hence there might be large leakage currents to earth, which might cause considerable damage by electrolysis. It looks as if concentric systems of house wiring with the outer earthed would never be possible in connexion with central stations. It is a retrograde step to use the earth to carry current. If we try and earth the middle main of a large three-wire system we get a current of fifty or even a hundred amperes flowing to earth and finding the shortest paths to the negative conductor. It is therefore a question which admits of an easy answer when large systems are under consideration, namely, that we ought not to earth the middle conductor. We are left, then, in the unsatisfactory position that the pressure on one of the wires in a house circuit supplied at 250 volts with ordinary supply mains may be at a pressure of between four and five hundred volts from earth—a pressure that has ofted proved fatal. At Glasgow triple concentric mains are used, and the middle main is earthed through a resistance. This solution, although not very satisfactory, is the best we have as yet examined.

With alternating current systems the same drawbacks do not apply, and it is much easier to get satisfactory solutions. For example, with three-wire polyphase systems we can use star windings, and earth the centre of the star through a small choking coil. As the frequency of the leakage currents passing through the choking coil are three times as rapid as the frequency of the currents in the mains, there is very little leakage. When mesh windings are used it is well to have star windings in addition, with their centres earthed so as to keep the mains all at the same potential from earth.

GENERAL BUILDING NEWS.

RESTORATION OF NAVE, ST. STEPHEN'S CHURCH, CAERWENT, MONMOUTHSHIRE.—The nave of this church was reopened on the 5th inst., after restoration. The work was executed by Mr. W. Clarke, of Llandaff, under the direction of Mr. G. E. Halliday.

ST. LUKE'S CHURCH, GLOUCESTER.—This church, at the corner of Linden-road and Bristol-road, Gloucester, was consecrated recently. The work is completed up to the third bay of the nave, leaving two bays and the tower boundary walls, &c., to complete the original plan. The materials are red brick with Bath stone facings, the roof being covered with Tilberthwaite green slates. Mr. T. J. Williams, of Gloucester, was the builder, and Mr. Walter Planck, of London and Gloucester, was the architect.

ST. JUDE'S CHURCH, HANLEY.—The new Church of St. Jude, Hanley, will consist of a nave with aisles on either side and with porches and choir vestry at the west end, a chancel with organ-chamber and priest's vestry on the north side, and a morning chapel on the south side. The nave is 81 ft. long, 30 ft. wide, and 35 ft. high to eaves, and

52 ft. to the ridge, and is separated from the aisles on either side by five arches of stone, springing from stone piers. At the west end of the south aisle is the baptistry with a bayed end projecting beyond the aisle wall. The aisles have large windows, and the roofs finish just over the nave arches, allowing of clearstory windows over the latter. The chancel, 36 ft. long, is a continuation of the nave, there being no break in width or height, but the division is marked by a double-roof principal, with stone shafts running down the walls, and the chancel roof is of a better character than that of the nave. The floor of the chancel will be well raised, and a large arch opens into the organ-chamber on the north side and two smaller arches open into the morning chapel on the south side; a large east window is placed high up to allow of a high reredos at some time. The morning chapel opens into the south aisles with an archway, and there is a porch giving access to this aisle and the chapel. The walls of the interior will be plastered. It is intended that the interior shall be enriched by mosaics some time. The church will accommodate 800, and its total length from east to west is 150 ft. outside, with a width to the outside of the aisle walls of 63 ft. and to the outside of the organ chamber and morning chapel of 85 ft. The exterior is of red bricks, with stone dressings to windows and doors. The roofs are being covered with tiles, and the length of ridge is broken by a small spire containing an exhaust ventilator at the junction of nave and chancel, the total height to the top of the cross on this spire from the ground being 88 ft. The church will be heated by low-pressure steam with radiators so placed as to warm the air in the porches before it enters the church. The lighting will be by electricity. The total cost of the church and land will be about 10,000*l*. The contract is being carried out by Mr. T. Godwin, and the architects are Messrs. R. Scrivener & Sons.

PRESBYTERIAN CHURCH, NEWCASTLE-ON-TYNE.—The foundation-stone was laid recently of a Presbyterian church which is being erected in College-road, Newcastle-on-Tyne. The architects are Messrs. Badenoch & Bruce.

CHURCH, WEST HARTLEPOOL.—The foundation-stone of St. Matthew's Mission Church, West Hartlepool, was laid on the 31st ult. The new church is being built on the site at the corner of Elwick-road and Arncliffe-gardens. The plans have been prepared by Mr. J. J. Wilson, and the contractors are Messrs. Brazell & Whitton, West Hartlepool. The building is to be of pressed red brick, with stone dressings, and the style is Perpendicular. There will be a main hall, capable of seating 320 people, with a chancel and organ chamber, and two classrooms. The total cost, including site, is estimated at 3,000*l*.

CHURCH, POULTON, CHESHIRE.—The opening services of St. Luke's Church, Poulton, Seacombe, took place on the 1st inst. The new church lies within the parish boundary of the mother church of Wallasey. The site is at the corner of Mill-lane. So far, funds have only permitted the erection of the nave, baptistry, and narthex; the chancel, side chapel, vestries, and organ chamber being left over until sufficient money is raised. The style is Early English, and the building is of Ruabon brick, with stone dressings. The floor is laid in wood blocks. The roof is formed of pitch pine, and ceiled throughout with pitch pine boarding. The architect was Mr. Harry May, of Liverpool; and the contractors were Messrs. William Tomkinson & Sons, of Liverpool. The various fittings have been supplied by Messrs. Jones & Willis. The oak pulpit was designed by the architect, and the lectern is a modelled brass eagle. The font, a relic of old times, found in the rector's garden, has been placed upon a stone base of the Norman period, and placed in the baptistry. The dimensions of the present building are:—Length, 61 ft.; total width, including aisles, 48 ft. The nave, 26 ft. wide, requires the chancel, 30 ft. in length and the same in width. Seating accommodation is provided for 300 worshippers, which will be considerably increased when the chancel is added. The total cost of the work so far undertaken has been 2,500*l*.

LEAMINGTON PARISH CHURCH EXTENSION.—Leamington Parish Church, which has been closed for some time during the progress of extensions and alterations, was reopened on the 2nd inst. The church has undergone many enlargements since the early years of the century, when it was a small village church, with an embattled tower, with accommodation for less than two hundred worshippers. The new scheme launched by the present vicar includes, besides the lengthening of the nave, the provision of a new baptistry, and the building of a clock tower, designs for which are in preparation. The enlarged church will accommodate 1,500 worshippers. The enlargement has been carried out by Messrs. Smith & Sons, builders, Milverton, in accordance with the designs of the late Sir Arthur Blomfield, and under the superintendence of the firm of Sir Arthur W. Blomfield & Son. The estimated cost of the enlargement and restoration is 18,000*l*.

REOPENING OF CHRIST CHURCH, CORBRIDGE, STAFFORDSHIRE.—This church was recently reopened after restoration. The work was carried out by Mr. William Cooke, of Bursiem. Mr. G. L. Jones, Bursiem, was the architect.

PRIMITIVE METHODIST CHAPEL, LOUGHBOROUGH, LEICESTERSHIRE.—The Primitive Methodist Chapel in Swan-street, Loughborough, was re-opened on the 31st ult., after alteration and renovation. The architects were Messrs. Barrowcliff & Allcock, and the constructional work was executed by Mr. A. Faulks. The painting and decorative work was carried out by Mr. A. Shepherd, and the heating apparatus was supplied by Messrs. Messenger & Co. A choir gallery has been formed behind the pulpit, and an organ by Messrs. T. Hardy & Son, of Stockport, has been placed in this gallery.

WESLEYAN CHURCH, BRAMPTON, DURHAM.—A Wesleyan Church has been erected in Main-street, Brampton. The church has seating accommodation for 400 persons. At the main entrance is a tower, terminating with a spire to a height of 67 ft. The fittings throughout are of pitch pine, and the roof is partially open with arched work underneath and pitch pine ceiling. The architect is Mr. John Wills, of Derby and London; and the contractors: Mason work, Mr. T. Telfer, Langholm; joiners' work, Mr. J. H. Reed, Carlisle; plastering, Mr. W. Barker, Brampton; painting and glazing, Messrs. Penfold & Son, Brampton; plumbing, Messrs. Wallace & Allen, Glasgow; slating, Mr. Hewitson, Carlisle; heating, Mr. Corbett, Carlisle.

RESTORATION OF ST. GEORGE'S CHURCH, LEEDS.—The work in connexion with the restoration of St. George's Church, Leeds, is approaching completion. It has been carried on under the supervision of the architect, Mr. Walker.

ST. SILAS CHURCH, BELFAST.—The foundation-stones of this church, which is in the Old Park district, were laid on the 3rd inst. Mr. Thos. Roe is the architect, and Messrs. Campbell & Lowry are the builders.

REOPENING OF PARISH CHURCH, BRUNDALL, NORFOLK.—The parish Church of St. Lawrence, at Brundall, was reopened recently after alteration. The work consists of an addition of a north aisle and vestry, and the re-seating of the chancel with oak choir stalls. A carved oak pulpit and an eagle lectern of oak have been presented to the church. The architect for the alterations was Mr. A. J. Lacey, of Norwich. Mr. R. W. Riches, of Postwick, was the contractor; the glazing was by Mr. J. Horth, Norwich, and the casements by Messrs. Barnes & Pye, St. Miles's Foundry. The pulpit was made by Messrs. Howard, of Norwich.

CHURCH, WOOLMER-GREEN, WELWYN, HERTS.—The Church of St. Michael and All Angels, Woolmer-green, in the parish of Welwyn, was consecrated on the 3rd inst. The building is of red brick, with stone dressings, and has a tiled roof. Mr. R. Weir Schultz, of London, was the architect, and Mr. F. Lawrence, of Datchworth, the builder.

GIRLS' SCHOOL, BRUTON, SOMERSETSHIRE.—On the 26th ult. a new school was opened for "The Bruton Girls' School Company, Limited." The new buildings, which include the school proper and the mistress's house in one block, are situated near Cole Station. The building has been constructed of local stone, with Bath stone dressings, and the roofs are covered with plain red tiles. The ground floor provides accommodation for sixty or more scholars in a schoolroom 44 ft. long by 20 ft. wide; it is capable of division into two rooms by means of a sliding partition, and there are in addition two classrooms for cooking and laundry work; a dining hall to seat fifty girls, cloakroom, lavatory, store, teachers' study, mistress's dining and drawing-rooms, large kitchen, with pantry and servery in connexion with dining-hall, scullery, washhouse, and usual offices. The upper floor, which is reached by two staircases, contains a room for science and art work, with storeroom attached, three dormitories for twenty to thirty beds, sick ward for four beds, six other bedrooms, bathrooms, lavatories, &c., boxroom, linen rooms, &c. Mr. Arthur J. Pictor was the architect of the new buildings, which have cost over 3,000*l*. to build. Mr. T. Hobbs, of Bruton, is the contractor.

THE DUKE'S SCHOOL, ALNWICK.—Designs for the new Duke's School at Alnwick have been prepared by Mr. J. Wightman Douglas, of Alnwick.

BOARD SCHOOLS, SUTTON-IN-ASHFIELD, NOTTINGHAMSHIRE.—A new block of Board schools was opened at Sutton-in-Ashfield on the 31st ult. The buildings are to be known as the Central Schools, and are situated off Priestsie-road, and facing the Great Northern Railway. The schools, which cover an acre of ground, are built of brick, with stone dressings, and have accommodation for 284 boys, the same number of girls, and 300 infants. They are in three separate blocks. Boyle's system of ventilation has been adopted; the furniture has been supplied by the Bennett Furnishing Company, of London, and the hot-water heating apparatus by Mr. W. Haslam, of Hardstoft. There are also improved patent folding partitions, these having been supplied by Messrs. Peace & Norquoy. Mr. H. Shaw, of Sutton, was entrusted with the contract, while Mr. J. P. Adlington was the architect.

BOARD SCHOOL, NORTHAMPTON.—The foundation-stone was laid recently of the Board school which is being erected in Barry-road and School-road, Northampton. Messrs. Law & Harris are the architects, and Councillor A. P. Hawtin is the builder. The clerk of works is Mr. George Bull.

WORKHOUSE, HUNSLET, YORKSHIRE.—On the 8th inst. the foundation-stone of the new workhouse to be erected for the Hunslet Union, off Wood-lane, Rothwell Haigh, was laid. The new house is to be built on the pavilion system, and will, it is expected, be ready for occupation in December, 1902. The space at disposal at present is a little over 4 acres, and the accommodation is for 414 inmates. The new buildings, however, are designed to house between 600 and 700 persons, and as the site comprises about 20 acres there is plenty of room for future extensions. The buildings are being erected in six groups—(1) an entrance building in which vagrants will be provided for on the cellular system; (2) a main building containing an administrative block, pavilions for male and female aged and able-bodied inmates, dining-hall, business offices, master's house, and all other necessary apartments; (3) laundry and boiler house buildings; (4) an infirmary connected with the main building by a covered corridor and facing south, with nurses' home in the centre; (5) a lunacy building; and (6) an isolation hospital. Aged married couples are to have cottages on an elevated portion of the site apart from the main building and facing the roadway, each with a garden in front. Robin Hood bricks and stone dressings will be used, and the roofs will be of Westmoreland green slate. Mr. J. H. Morton, of South Shields, has furnished the designs, and Messrs. Harold Arnold & Son, of Doncaster, are the contractors.

COUNTY GIRLS' SCHOOL, HENGOED, GLAMORGAN.—The new County Girls' School at Hengoed was opened recently. Accommodation is provided for eighty scholars. There are four classrooms opening to an assembly hall 37 ft. by 22 ft., while music-room, cookery classroom, dining hall, headmistress-room, and cloakrooms and customary office are provided. The walls are of local stone faced with terra-cotta dressings and blue Forest stone sills. The assembly hall is floored with wood blocks. All the rooms are heated by means of open grates. A portion of the grounds is levelled for a tennis court, and the whole are enclosed. Messrs. W. Williams & Sons, of New Tredegar, erected the buildings at a cost of 3,800*l*. The architects were Messrs. James & Morgan, Cardiff.

HOME, CLAPHAM, LONDON.—The dedication of the new and permanent home of "The Free Home for the Dying," at North Side, Clapham Common, took place recently. The new building was, says the *Clapham Observer*, formerly the residence of the late Sir Charles Barry, and is one of the few fine old houses facing the Common still remaining. The home has undergone considerable alteration at the hands of Mr. A. E. Street, architect. The new building contains twenty-five beds, of which twelve are in the women's ward. The men's ward contains eight beds, whilst in addition there are several beds in separate rooms.

ST. MARY'S HOME FOR GIRLS, EASTNOR, HEREFORDSHIRE.—This home, which has accommodation for thirty-six children, and is in connexion with the Church of England Society for Providing Homes for Waifs and Strays, was opened recently. The building has two stories, and is of brick. It was built about eighteen months ago by Mr. George Hill, of Ledbury, Mr. E. Fisher, of London, being the architect.

WORKHOUSE, CHANDLER'S FORD, HAMPSHIRE.—The new Hursley workhouse at Chandler's Ford was opened a few weeks ago. Messrs. Musselwhite & Son, of Basingstoke, were the builders, and Messrs. Cancellor & Hill, of Winchester, were the architects. The contract price was just over 9,000*l*.

NEW BOARD SCHOOLS IN ABERDEEN.—Aberdeen School Board has resolved on an extensive building programme, including doubling of Old Aberdeen School, enlargement of Ruthrieston School, and reconstruction of Woodside School. It is also intended to build a new central school in School Hill, and to enlarge the School Board's offices in Union-terrace. It is estimated that 70,000*l*. will be required to carry out the programme, and the department of Mr. Ogg Allan, the Board's Architect and master of works, is accordingly to be increased by the appointment of a draughtsman.

TEMPERANCE HOTEL AND RESTAURANT, CLACTON-ON-SEA.—A temperance hotel and restaurant is being erected at Clacton-on-Sea from a design by Mr. T. H. Baker, of that town. The builder is Mr. H. C. Nunn. The building will be of brick and stone, and will contain, on the ground floor, a dining-room 70 ft. long; on the first floor, the kitchen and serveries, and in the front part of this floor, another dining-room. The rest of the building will consist of a basement, and the second, third, and fourth floor, containing together sixteen rooms, &c.

WORKMEN'S DWELLINGS, MORPETH, NORTHUMBERLAND.—An inquiry into an application by the Morpeth Town Council to the Local Government Board for permission to borrow 15,000*l*. for making advances under the Small Holdings Acquisition Act, 1899, was held at the Town Hall, Morpeth, on the 6th inst., by Mr. W. O. E. Meade-King. It was stated that the Corporation had put on the market a piece of land known as the Middle Greens, stipulating in the conditions of sale that only houses for working men should be built thereon. Mr. H. J. Boolds is the architect to the Corporation in this matter.

STATION HOTEL, KINTORE, ABERDEENSHIRE.—The Station Hotel, Kintore, has just been opened. The building is of three stories, and was designed by Mr. John Cameron, of Aberdeen. The principal contractors were:—Masonry, Mr. John Smith,

Kintore; carpentry, Mr. John Maitland, Kintore; painting, Mr. Forrest, Aberdeen; plastering, Mr. Sievewright, Inverurie; and slating, Mr. Farquhar, Woodside.

FREEMASONS' HALL, LURGAN, CO. ARMAGH.—The new Freemasons' Hall, Lurgan, was dedicated on the 2nd inst. The building is of red brick, with terra-cotta dressings. Mr. W. Godfrey Ferguson, of Belfast, was the architect, and the builder was Mr. Thomas M'Millan, of the same place.

TRAINING COLLEGE, DERBY.—Additional buildings have been erected in connexion with the Lichfield and Southwell Diocesan Training College for School-mistresses at Derby. The chief are a dining-hall and a chapel. The last-named building is of Leicestershire-brick, with dressings of Matlock stone. The roof is of pitch pine. The building is warmed by hot water, and lighted by electricity. The architect is Mr. Percy H. Currey, of Derby, and the contractors are Messrs. Ford & Co., of Derby.

NEW DOORWAY FOR BAKEWELL CHURCH.—Bishop Abraham, father of the Bishop of Bakewell, recently dedicated and reopened the ancient northern doorway of Bakewell Church, which has been lately restored. The work has been carried out by Mr. Robert Smith, builder, &c., of Bakewell, from designs of Mr. C. H. Fowler, architect, of Durham. The original proportions of the ancient doorway have been regained by lowering the level of the outside approach, but the old stonework has not been interfered with. The new door is of English oak of fifteenth century design, and the wind porch inside the church is of wainscot oak of the same design. It is lighted through glass panels from the church inside, and is carried up above the arch of the doorway to a considerable height. The broadening of the flight of steps and the increased height of the porch add largely to the dignity of this portion of the church.—*Derbyshire Courier.*

SANITARY AND ENGINEERING NEWS.

SEWAGE DISPOSAL, NOTTINGHAM.—A Local Government Board inquiry into an application by the Nottingham Corporation for sanction to borrow 335,000*l.* for purposes of sewage disposal, was held at the Guildhall, Nottingham, on the 7th inst. The inquiry was conducted by Mr. F. H. Tulloch. The scheme was described by Mr. A. Brown, the City Engineer, who stated that the sum named would be divided as follows:—Value of land, 155,624*l.*; still sewage carrier, 3,250 yards long, 21,775*l.*; new main carrier formed of concrete, 2,000 yards long, 11,725*l.*; sub-soil drains, earthen pipes 25 in. diameter, 4,650 yards long, 6,045*l.*; sub-soil drains, 12 in. earthenware pipes, 42,784 yards long, 21,926*l.*; 4 in. sub-soil drains, 168,410 yards long, 33,682*l.*; sub-soil drain contingencies, 10,390*l.* 4*s.*; formation of cart roads, 5,400 yards long, 11,880*l.*; rough levelling and alterations to dykes, &c., 18,150*l.*; railway siding, 1,474*l.*; drainage of the village of Stoke Bardolph, 1,189*l.*; water supply of Stoke Bardolph, 330*l.*; stock, implements, &c., 17,000*l.*; tenant right, 2,600*l.*; working capital, 11,000*l.* Other evidence having been given, the inquiry closed.

SEWAGE DISPOSAL, MARSDEN, YORKSHIRE.—At the Mechanics' Hall, Marsden, recently, Colonel J. T. Marsh, R.E., held a Local Government Board inquiry into an application by the Marsden Urban District Council for consent to a deviation from the scheme of sewerage and sewage disposal works, for which a loan of 11,000*l.* was sanctioned in July, 1896. It was stated that the council proposed to adopt the septic tank system, and two tanks 67 ft. long, 20 ft. wide, and 9 ft. deep, would be constructed. The scheme was explained in detail by Mr. J. Haigh, the engineer.

SEWAGE DISPOSAL, NEWTOWN LINFORD, LEICESTERSHIRE.—Mr. F. H. Tulloch, C.E., inspector to the Local Government Board, held an inquiry at the Schools, Newtown Linford, recently, into an application by the Barrow-on-Soar Rural District Council to borrow 2,080*l.* for the purpose of sewerage and sewage disposal for the parish of Newtown Linford. The scheme was explained by Mr. F. Griffith, the Engineer.

STAINED GLASS AND DECORATION.

MEMORIAL WINDOW, GREAT STAUGHTON CHURCH, HUNTINGDONSHIRE.—A stained-glass window, the work of Messrs. Lavers & Westlake, has just been dedicated in this church, to the memory of Mrs. Frances Cox Robotham.

NEW WINDOW, REDLANDS, BRISTOL.—A stained-glass memorial window has recently been erected in Redlands Green Chapel, Bristol, to a late member of the congregation, Dr. Prichard, a Bristol physician. The window is Classic in treatment, and was designed by Mr. T. W. Camm (Smethwick, Birmingham) with a special view to harmonious relation to the building, a fine example of Classic art. The subject is "The Great Healer; St. Luke, the Physician; and St. Barnabas, the Son of Consolation," and is chosen with a view to indicate the profession of the person to whose memory it is dedicated.

MEMORIAL WINDOWS, ST. MARGARET'S CHURCH, DURHAM.—Three stained-glass windows have been placed in the south aisle of St. Margaret's church, Durham, in memory of Lieutenant C. D. Shafto, who was killed at Vaal Krantz, Natal, in February last. A fourth window has been placed in the church in memory of a brother of the Lieutenant. The whole of the windows were made and inserted by Messrs. Burlison & Grylls, of London.

DECORATION, &C., LONDON PAVILION.—Closed for redecoration and structural alterations, which have occupied some five months, the London Pavilion has just been reopened. Messrs. Wylson & Long were the architects under whom the work has been carried out. The proscenium is widened, the stage itself has been lowered, and the seating so carried out that there is a clear view to be obtained from every part of the house. The general scheme of colour in the decoration is white or cream and gold, while the upholstery and silk panellings on the walls, executed by Messrs. Shoolbred & Co., and Mr. Lyon, of Holborn, are of a warm terra-cotta hue.

ELECTRIC LIGHTING NEWS.

ELECTRIC LIGHTING, &C., BATLEY, YORKSHIRE.—A Local Government Board inquiry, conducted by Mr. Sandford Fawcett, was held at the Batley Town Hall on the 31st ult. into an application by the Town Council for sanction to borrow 25,602*l.* for electric lighting and the supply of motor power. The inquiry was attended by Mr. Clivehugh, electrical engineer, and it was explained that the Corporation had in contemplation the construction of tramways. The site proposed for the works is at New Ing Fields.

ELECTRICITY WORKS, KEIGHLEY, YORKSHIRE.—The memorial-stone of the municipal electricity works at Keighley has just been laid. The engineer of the scheme is Mr. J. M. Smyth.

FOREIGN.

FRANCE.—During the scholastic recess a considerable portion of the decorations of the new Sorbonne has been completed. The Descartes Theatre has received a large painting by M. Gabriel Ferrier symbolising "The Poet's Dream," and the Students' Library a painting by M. J. P. Laurens of "Francis I. visiting the Sorbonne Printing-works." A picture of "Truth," by M. Henner, decorates the "Salle des Autorités." Among the decorative works still to be executed are the portraits of Corneille, Pascal, Bossuet, Molière, and Richelieu for the "Salle du Doctorat;" a large decorative picture by M. Dagnan-Bouveret of "Apollo and the Muses," for the Richelieu Theatre; pictures by M. Toudouze for the Turgot Theatre; two pictures by M. Weertz for what is called the "Sundial Gallery," and ten panels by M. Poilpot for the vestibules of the two Faculties, and which represent "The Great Epochs of Humanity." —— A new gateway has been opened in the Paris fortification lines, at the end of the Rue Molitor, between the Porte d'Auteuil and the Porte de Versailles.——The new Hôtel de Ville of Versailles, which will be shortly opened, has been built from the plans of M. Legrand, who has utilised, for the decoration of the principal rooms, the splendid eighteenth century carved woodwork belonging to the old Mairie, a considerable portion of which has been preserved.——The death is announced, at the age of sixty, of M. Tiburce de Mare, painter and engraver, pupil of his father and of Gaillard. He exhibited many portraits between 1870 and 1881, and in 1884 obtained a medal for his engravings after Raphael.

JAPAN.—The twenty-sixth annual Report of the Minister of State for Education in Japan gives some interesting particulars concerning scientific and technical education in that country. Amongst other things we notice that the Tokio Fine Arts School is making steady progress. The object of this school is to train specialists in various arts, and instructors in general drawing. The school is splendidly equipped, and the course of study includes painting, designing, sculpture, architecture, and industrial fine arts. Each course of study extends over four years, a preparatory course of one year being obligatory on every pupil after his admission. The number of pupils is about 300. Amongst the technical schools we may mention that at Osaka, which is designed to prepare pupils as first-class workmen and foremen. It is divided into two departments, one of which deals with mechanical technology and the other with chemical technology. There are altogther twenty-five apprentices' schools in different parts of the country, which, by means of courses extending from six months, are intended to prepare the pupils as workmen in special industries.

SOCIETY OF ARTS.—The Society of Arts will hold the opening meeting of its session, the 147th since the foundation of the Society in 1754, on Wednesday evening, November 21, when an address will be delivered by Sir John Evans, K.C.B., F.R.S., Vice-President and Chairman of the Council. Among the lectures to be given previous to Christmas will be one on December 5, by Professor H. S. Hele-Shaw, LL.D., F.R.S., on "Road Traction"; and on December 12 by Professor Frank Clowes, D.Sc., on "The Treatment of London Sewage."

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Mr. W. C. Griffiths, architect, 29, High-street, Newport, has opened a London office at Oswaldestre House, Norfolk-street, Strand.

SOUTH KENSINGTON MUSEUM.—The paintings bequeathed by the late Henry Spencer Ashbee, F.S.A., are now exhibited in the picture galleries of the Museum. The collection, which comprises 204 works, mainly consists of water-colour paintings, including early works by such men as J. R. Cozens, William Payne, Thomas Hearne, J. M. W. Turner (R.A.), H. Edridge (A.R.A.), T. Rowlandson, John Varley, R. P. Bonington, George Chambers, David Cox, Samuel Prout, William Hunt, P. de Wint, W. Clarkson Stanfield (R.A.), and George Cattermole. Among the more modern works are drawings by Sir John Gilbert (R.A.), H. G. Hine, Carl Haag, E. M. Wimperis, T. Sidney Cooper (R.A.), Charles Green, J. Fulleylove, and Sir James Linton. There are also fifty water-colour drawings by L. F. Cassas for "Voyage Pittoresque et Historique de l'Istrie et Dalmatie," published at Paris in 1802. The oil paintings include works by Sir A. W. Callcott, R.A., G. S. Newton, R.A., A. V. Copley Fielding, John Linnell, Sir John Gilbert, R.A., and T. Sidney Cooper, R.A.

DRAYTON MANOR, TAMWORTH.—It is stated that a New York banker has rented, with the option of purchase, Sir Robert Peel's estate at Drayton-Bassett, near Tamworth. The mansion was planned and designed for Sir Robert Peel, the distinguished statesman, by Sir Robert Smirke; the portrait gallery, added at the south-east corner of the house, was completed in 1846. Smirke was the architect also of Sir Robert Peel's house in Whitehall Gardens, Whitehall.

BROADLANDS, NEAR ASCOT.—This house, erected after the plans and designs of Mr. Norman Shaw, R.A., has been placed in the market. The billiard-room is fitted with the oaken carving and panelling originally designed and finished by Michael Wolgemuth for his own residence at Nuremberg. The property, which extends over 100 acres, comprises a park, a cricket ground, some model farm buildings, cottages, &c.

THE GLASGOW ARCHITECTURAL CRAFTSMEN'S SOCIETY.—The usual meeting was held on Friday, the 9th inst., when papers were read on the "Specification of a Roof"; by Mr. D. Ritchie on joiner's work, by Mr. Isaac Low, jun., on plumber's work, and Mr. J. Marshall on glazier's work. A good discussion followed, and its thoroughly practical nature was greatly appreciated by the members.

T-SQUARE CLUB, LONDON.—This Club has been established for architects, artists, engineers, and surveyors, and students in those professions. The object of the Club is to promote friendly intercourse between the members by giving a series of smoking concerts, which will be held in the Foyer of Covent Garden Theatre. The opening concert will be held on Wednesday, November 21st, when the chair will be taken by Mr. W. Emerson, President of the Royal Institute of British Architects. Over 135 members have already joined the Club. Full particulars of the Club may be obtained from the Hon. Secretary, Mr. T. Wilson Aldwinckle, "Saratoga," Dacres-road, Forest Hill, S.E.

THE HOUSING PROBLEM.—A meeting of the Southampton Literary and Philosophical Society was held at the Grammar School on the 5th inst., when a paper on the "Housing of the Working Classes" was read by Mr. Chas. J. Hair, A.R.I.B.A. It was not until the Public Authorities began to count the cost, he said, that they found what a gigantic problem they were dealing with. After paying for arbitrations, trade interests, and compensation, the land was found to be of such a value that it was quite impossible to build houses on it at a price that the poor could afford to pay in rent. The result was that the Authorities endeavoured to make the most they could of it by building high flats with, in some cases, shops on the ground floor. The rents of these flats were considerably higher than it was possible for the old inhabitants to pay, and those inhabitants went away to make slums by overcrowding elsewhere. After buying the land, a Corporation had further difficulties to face. Many of the restrictions imposed by the Local Government Board helped materially to add to the cost of the building. The restriction to thirty years for borrowing the money for a scheme meant that nearly 5 per cent. had to be paid for it. There was the delay consequent on getting the plans approved first by a committee and then by the whole Council, especially when, as was generally the case, a serious deficit had to be shown on the returns. The reason for so much delay was that Corporations had been trying to show a profit on the undertaking, and this, in the majority of cases, was simply an impossibility on account of the high price of the land. This fact had at last been acknowledged by London and in some other towns, where it had been decided to re-value the land for the purpose of artisans' dwellings, and put the difference between this valuation and the actual cost down to street improvement account. In many cases public bodies could not even make a financial success of building for people who could afford to pay a good rent. Private companies had done this, and were able to

pay their shareholders as much as 5 per cent., so that it seemed that private enterprise should be encouraged to build for that class, and public bodies must try to solve the difficult problem of providing for the very poorest. Many speakers at various conferences which he had attended, advocated the housing of the poor in the country, and giving them cheap tram or train passes to and from their work. By all means should the better-paid artisan be encouraged to live in the suburbs, but the very poorest could not afford to live far from their work, and many of them, as was the case in the docks, were employed on night duty. Reverting to the question of public housing schemes, Mr. Hair said he thought committees make the mistake of either trying to learn how to do the plans themselves, by sending deputations to other towns, or else trying to judge them. It was a special duty, and unless a man could give some considerable time to it, he could not expect to produce good results. Locally it was said that the municipal lodging-house was a huge failure, and that the artisans' dwellings were a white elephant. If the land were re-valued at a reasonable building valuation—say, 20s. per square yard—the buildings would pay; and, further, in another fifty-nine years they would become the absolute freehold property of the ratepayers. The lodging-house had been more successful than its founders hoped; it had often been found necessary to send men away for want of accommodation. Of the twenty-six tenements in the artisans' dwellings, twenty-four were let, and the building had not been open a year yet. There were still two big areas of land to be built upon to complete the Corporation scheme, and he was sorry to say that at present there appeared to be a deadlock. If private enterprise could be induced to step in and build workmen's dwellings on the land, so much the better, provided there was no jerry-building. It was impossible to build cottages, as in that way the 600 people which the Local Government Board required them to re-house could not be accommodated. Mr. Hair then outlined a scheme which he had offered to the Council to meet the difficulty, and which he believed, if adopted, would be a great success. It provided for the re-housing of the whole 600 people, and left a large portion of the site to be sold for commercial purposes or utilised for more artisans' dwellings. His scheme would not interfere with the Undercroft. It provided for three-story buildings, planned on the lines of a cottage, with, in most cases, a living-room, also used as a kitchen, a front parlour, and two bedrooms. He expected two families to take each tenement, not an ideal way of living, perhaps, but a very considerable improvement on the way in which many people now had to live. The buildings in his scheme were estimated to cost 18,200*l.*, including all professional fees and expenses. Valuing the land for housing purposes at 3*l.* per foot frontage, this would show a return of over 8 per cent., supposing the rent were equivalent to 1s. per week for each person living in the buildings. In conclusion, Mr. Hair said that if public bodies were going to do any good at all in the future they must try to buy their land better or cheaper; then they must exercise the strictest economy both in planning and detail. In Southampton, if a lodging-house were built near the Docks on some of the waste ground belonging to the Corporation, it would always be full, and would pay even if let at 4d. per bed.

MAIDENHEAD.—About thirteen acres of the ornamental grounds of Fishery House, Maidenhead, are to be laid out as a building estate with about 800 ft. of river frontage.

THE SANITARY INSPECTORS' ASSOCIATION.—A meeting of this Association was held at Carpenters' Hall, London-wall, on the 10th inst., when the Chairman, Mr. W. H. Grigg, delivered an inaugural address. In the course of his remarks he said: "I am sorry to have no exhilarating news to tell you in regard to the Sanitary Inspectors' Examination Board. A new phase of the subject has recently arisen. The London County Council, seeing that they are the technical teaching authority established by law in London, consider that they have not been properly treated in the matter. They consider that the whole question of the establishment of the Examination Board ought properly to have been left to their Technical Education Board—a view which will doubtless be shared by many—but they do not think the Government will be likely to undo so quickly what has been but recently done. They therefore, on the ground of the time being inopportune, do not intend for the present to pursue that line of policy, but are petitioning the Local Government Board to exercise their power under the Articles of Association to give them five representatives on the Board. The claim is further based on the fact that the Council provide one-half of the salaries of most of the inspectors in London. It does not appear to have occurred to the Council that this is the only professional examining body known which does not include a single one of the persons following the profession to which the examination relates. It may be worth our while to point this out to the Council and seek their assistance in securing proper representation on the Board. If the London County Council formed this Examination Board for inspectors they would surely take care that we had at least reasonable representation thereon."

CAPITAL AND LABOUR.

EDINBURGH BUILDING TRADE.—Notwithstanding the adjustment of the masons' strike some weeks ago, the building trade in Edinburgh has continued in a very dull state. Even before the strike was decided upon work was slack, and this was indicated by the prolonged resistance which the employers were able to offer to the men's demands. Whichever way that dispute may be regarded, it is acknowledged by not a few of the men themselves that the strike was somewhat ill-timed. It was true that there was a large number of heavy contracts on hand, mostly of a public kind, but for some time back speculative building had been depressed, and now it is practically at a standstill. For some years back tenements have been rushed up at an unprecedented rate, and there has also been a great increase in the erection of villas in the suburbs. These have been built for selling purposes, more than for letting, but it seems that the speculators are having a difficulty in getting the property off their hands. There is also a considerable number of unlet houses all over the city. The only demand for house property is of the class of cheaply-rented houses, and the builder does not usually look upon these as being greatly remunerative. In addition to this over-building, it is undoubtedly the case that, owing to the unsettled state of the labour market, there has been little disposition on the part of the speculator to embark upon any fresh work. With a threatened strike they could not hope to have completed any property in time for the selling season. There has also been a scarcity of money, while the high price of material has also combined to depress the trade. Many workmen have not been able to make a start since the close of the masons' dispute, and a very dismal winter is in front of them. During the strike the Masons' Society sent a good number of men to the country, where work was to be had. The consequence is that building in the country is pretty well exhausted, and the men have returned to the city. For masons the best of the season has now passed. Large contractors had the annoyance of seeing the summer practically wasted, and now they are being bombarded with large batches of applicants for work. At the new Fever Hospital at Colinton scores are being turned away daily. The supply of labour is likewise more than fully met at other large undertakings in the city. By those who are acquainted with the situation in Edinburgh, it is asserted that it will take many years before the trade recovers. Having gone so many weeks idle this summer, the operatives in Edinburgh are less able to bear a continuance of the present state of matters. Exact statistics are not available as to the number of men connected with the building trade who are at present going idle, as there are a good many who do not belong to the various organisations. Various estimates have gone as high as 1,000.—*Scotsman.*

LEGAL.

CLAIM FOR PERSONAL INJURIES.

AT the Clerkenwell County Court on Friday last week, before his Honour Judge Edge, James Isles, joiner and carpenter, Liverpool-street, King's Cross, claimed from Mr. E. D. Percy, builder, of Bayer-street, Golden-lane, E.C., 400*l.* damages for personal injuries.

Mr. Chester Jones was counsel for the plaintiff, and Mr. Elliott Hill represented the defendant.

Plaintiff's counsel explained that the injuries which his client had sustained were of a very serious nature, and in consequence he was under medical attendance for a long period. Indeed, he would be unable to carry on his occupation as joiner and carpenter for the rest of his life. The accident to the plaintiff, who had been in the employment of the defendant for about a month, occurred on March 10 last. He was sent to work at premises 143, Farringdon-road, where the defendant's men were constructing a lift to go through the premises; and a hole had to be cut from the top to the bottom of the place, after which it was necessary to put in on each floor what were called trimmers. Plaintiff started striking under the instructions given him, with the result that he overbalanced, and fell to the floor below, a distance of about 12 ft. He submitted that it was the defect of the defendant that he had not provided proper safeguards; and that, as the foreman ought not to have ordered the work to be done in that way, the defendant must be held responsible for his negligence. The plaintiff had, unfortunately, partially lost the use of his legs and had sustained injury to the spinal cord.

Plaintiff, who said he was twenty-six years old, then gave evidence in support of counsel's statement, and in cross-examination said he had done the work before and knew how to do it. His ordinary wages were 2*l.* 1s. 8d. a week, but he made a lot of overtime. He asked the foreman for a heavy hammer with which to do the work. He did not turn giddy and fall earlier in the day.

Dr. Bull described the plaintiff's injuries.

For the defence Dr. Patmore was called, and said he thought the plaintiff had walked better since July last. The injury having got somewhat better, might get better still.

The foreman to the defendant gave evidence to the effect that the plaintiff had the advantage of all proper plant on the job if he had taken advantage of it. The trimmer had not given way at all.

Counsel for the defendant contended that there was no evidence that the accident happened through any defect for which the defendant could be held responsible, and, in fact, that there was no defect in the plant at all.

After a protracted hearing the Judge said the conflicting evidence in cases of that kind caused him considerable anxiety and pain, and he was always sorry to find that even in small matters on which there ought not to be the smallest difference, there was a great diversity of testimony. He thought that the defendant was responsible, and gave a verdict for the plaintiff for 301*l.* 12s. with costs.

POINT UNDER THE PUBLIC HEALTH ACT, 1875.

THE case of Cawston *v.* the Bromley Urban District Council came before a Divisional Court of Queen's Bench on the 9th inst. by way of a special case stated.

The facts appeared to be these:—The District Council on February 13, 1897, gave notice to Mr. Cawston under the provisions of the Public Health Act, 1875, to sewer, pave, &c., a certain portion of Highland-road, Bromley. Mr. Cawston not complying with the notice, the District Council did the work at a cost as certified by their Surveyor of 717*l.* 11s. 9*d.* The Surveyor declared that sum chargeable against the frontagers and apportioned 372*l.* 12s. 4d. as being due from Mr. Cawston in respect of the frontages owned by him. This gentleman, however, disputed the apportionment and he appointed an arbitrator under the provisions of the Public Health Act, 1875. The District Council also appointed an arbitrator. The arbitrators having differed appointed an umpire who it was agreed should state his award in the form of a special case. At the hearing before the umpire, Mr. Cawston contended that he was entitled to dispute the right of the District Council or their Surveyor to charge part of the amount which was paid for work executed to the road, on the ground that such amount related to a sewer already vested in the District Council. The District Council's contention was that it was not competent to the umpire to inquire into the propriety of the items of cost, as they could not properly be questioned in this arbitration, which was limited by the provisions of Sections 150 and 257 of the Public Health Act, 1875. The question for the opinion of the Court, was whether the certificate of the Surveyor was conclusive evidence before the umpire of the total amount to be charged against the frontagers for the works executed on the road by the District Council.

At the conclusion of the arguments of Counsel, their Lordships held that the Surveyor's certificate for the purposes of the arbitration was binding upon the umpire as to the total amount.

Mr. Clarke Williams appeared for the District Council, and Mr. Morten Smith for Mr. Cawston.

BREAKING UP THE STREETS FOR TELEPHONE WIRES.

IMPORTANT ACTION.

THE case of the Attorney-General *v.* the National Telephone Company came before Mr. Justice Wills and a Special Jury in the Queen's Bench Division on the 12th inst.—an action by the Attorney-General on the relation of the London County Council, asking for an injunction restraining the National Telephone Company from breaking up the streets in the County of London for the purpose of laying their telephone wires underground without the consent of the London County Council.

Mr. Dickens, Q.C., and Mr. Daldy appeared for the London County Council; and Sir Edward Clarke, Q.C., Mr. Joseph Walton, Q.C., and Mr. Roskill for the National Telephone Company.

After the pleadings had been opened by Mr. Daldy, Sir Edward Clarke said that originally there were two sets of proceedings against the defendant company—one by the Postmaster-General and the other by the Attorney-General on the relation of the London County Council involving substantially the same questions—viz., whether there had been an interference with public rights and whether an injunction should be granted. The case of the Postmaster-General had been settled upon terms which restrained the defendants, as between the Government and itself, from doing any work for the purpose of extending the existing system of the Telephone Company in the streets of London. Such being the case, his clients had written to the London County Council suggesting that the present action should be allowed to stand over. The reply, however, was in the negative.

Mr. Dickens denied that the two sets of proceedings were identical. The injunction in the case of the Postmaster-General did not protect the interests of the London County Council in the event of the Postmaster-General and the Telephone Company coming to an arrangement.

Sir Edward Clarke said he was prepared, on behalf of the Telephone Company, to give an assurance that they would do nothing in contraven-

tion of the order in the case of the Postmaster-General without giving notice to the London County Council, so as to give them an opportunity of bringing on their action.

Mr. Dickens asked that the case should stand over for a fortnight in order that he might consult his clients.

In the result his Lordship adjourned the case generally with liberty to the County Council to apply to have it restored.

POINT UNDER THE WORKMEN'S COMPENSATION ACT, 1897.

THE case of Cosgrove *v.* Partington came before the Court of Appeal, composed of the Master of the Rolls and Lords Justices Collins and Stirling, on the 13th inst. on the appeal of the defendant from an award of the County Court Judge of Oldham, in an arbitration under the Workmen's Compensation Act, 1897. In this case the injured workman was employed by the defendant, a builder, and at the time of the accident was engaged with other workmen in putting a fifth story on to a cotton mill. The work was done by means of scaffolding, and included the hoisting of iron girders by means of a steam winch. The County Court Judge found that the man was engaged in an "engineering" work within the meaning of the Workmen's Compensation Act, and made an award in his favour. The employer now appealed on the ground that the employment was not in an "engineering" work within the meaning of the Act.

In the result, the Court, without calling upon counsel for the workman, held that the case came within Section 7, Sub-Section 2, of the Act, and dismissed the appeal with costs.

Mr. Ruegg, Q.C., and Mr. G. Mellor appeared in support of the appeal, and Mr. Herbert Smith for the workman.

PLASTERER'S CLAIM UNDER THE WORKMEN'S COMPENSATION ACT, 1897.

THE case of Furguson *v.* Green came before the Court of Appeal, composed of the Master of the Rolls and Lords Justices Collins and Stirling, on the 14th inst., on the master's appeal from the decision of the County Court Judge of Oldham, reversing the award of the arbitrator under the Workmen's Compensation Act. The claim was first referred to the arbitrator by the County Court Judge and the claim was decided against the plaintiff. The plaintiff then appealed to the County Court Judge, with the result that the arbitrator's decision was reversed.

It appeared that the plaintiff was a working plasterer in the defendant's employ, the defendant having entered into a contract with the building-owners of some cottages at Middleton for the plastering work. The cottages had been roofed in and the scaffolding outside had been taken down, when, on October 18, 1899, the applicant was engaged in plastering the walls and ceilings of the rooms of the cottages. For this purpose he had constructed a platform in the kitchen of one of the houses by means of two tressles, across which he placed two boards. One of the boards of the plaster-table came loose, and in attempting to repair it with a hammer, a nail flew into the plaintiff's eye and so injured it that it had to be removed. It was admitted that the building was over 30 ft. high at the time of the accident, and that the defendant was the "undertaker" within the meaning of the Act, but the arbitrator dismissed the claim for compensation on the ground that the tressles and boards did not constitute "scaffolding" within the meaning of the Act. The County Court Judge, however, held, on appeal, that the arrangement was "scaffolding," and reversed the arbitrator's decision, and awarded the plaintiff the agreed compensation of 10s. a week.

At the conclusion of the arguments of counsel, their Lordships held that the arbitrator, having decided the case on a question of fact, and that there was no question of law involved, the learned County Court Judge had no jurisdiction to reverse his decision. The award of the arbitrator was thus reinstated and the appeal allowed with costs.

A CARPENTER'S INJURIES.

IMPORTANT POINT UNDER THE WORKMEN'S COMPENSATION ACT, 1897.

THE case of Ben Whitehead *v.* Wm. Reader came before the Court of Appeal, composed of the Master of the Rolls and Lords Justices Collins and Stirling, on the 13th and 14th insts. on the appeal of the defendant in the case under the Workmen's Compensation Act, 1897, from the decision of the County Court Judge sitting at Coventry.

Mr. T. Willis-Chitty appeared for the appellant, and Mr. Montague Lush for the respondent.

Mr. Chitty, in opening the case, said the question raised was whether the accident which resulted in personal injuries to the plaintiff, Ben Whitehead, arose out of, or in the course of, his employment. He was engaged by the defendant (a builder) as a carpenter, and on the occasion in question he was sharpening a tool on a grindstone. This was worked by a leather strap which passed over shafting connected with a gas engine. As Whitehead was sharpening his tool, the strap flew off the wheel, and in trying to replace it he sustained the injuries in respect of which this claim was made. It appeared that the man was working in one shed and the grindstone was in another. He had been expressly ordered not to touch the machinery. All he had a right to do was to sharpen his tools at the grindstone.

The Master of the Rolls said it was part of the man's work to sharpen his tools at the grindstone, and it was in a case of emergency that he was attempting to replace the band which had come off.

Mr. Chitty said that the learned County Court Judge, in awarding the plaintiff compensation under the Act, had found as a fact that the man Whitehead had express orders not to touch the machinery. That made all the difference in this case. He was not there to contend that if the machinery at which a man was at work happened to go wrong it was not part of his duty to do what he could in the matter. But in this case it was clear that the learned Judge had so found that in trying to replace the band Whitehead was acting contrary to express orders. The learned Judge, however, awarded the applicant compensation on the ground that he was in the course of his employment when the accident occurred. The learned counsel submitted that there was no evidence to support that decision, and that it was contrary to the judgment of the Court of Appeal in the case of Lowe *v.* Pearson.

Mr. Lush, in support of the decision in the Court below, said that the learned Judge had not found as a fact that Whitehead had been specifically told not to replace the band. Granted that he had received orders not to touch the machinery, what the learned Judge found was that the man was not acting in accordance with those instructions in trying to put the band back into its place. The question, therefore, was, with that view of the facts, whether there was any evidence upon which the learned Judge could hold that, although Whitehead received his injuries through touching the band, he was still acting in the course of his employment. The defendant had argued that it necessarily followed from the fact that the plaintiff had been told not to touch the machinery that he was not acting in the course of his employment in attempting to replace the band. Counsel contended that was not so.

The Master of the Rolls: I see the award was 12s. 6d. per week. Was that payment to continue for ever?

Mr. Lush: Only until further order. The learned counsel, continuing, said that if it were the fact that the workman was told not to touch the band of the machinery, that might make a great difference in this case. The learned Judge's note of the proceedings below was a little ambiguous on that point.

The Master of the Rolls said he should like to know what the orders given to the man really were.

Mr. Lush said he did not quite know on what facts to base his argument.

In the result their lordships directed that the case should stand over in order that the learned County Court Judge might be asked to furnish the Court with a more full note of the evidence taken by him.

Order accordingly.

RECENT PATENTS:

ABSTRACTS OF PATENTED INVENTIONS.

14,336.—PIPE-WRENCHES, SPANNERS, VICES, &c.: *W. J. L. Guest.*—For an adjustment of the movable jaw is devised a lever which carries a pawl that engages with teeth cut in the body or stem of the wrench or spanner; to effect the final grip which locks the movable jaw, the lever is to be pressed down, when it can be retained with a loop.

14,346.—HEATING AND MOISTENING AIR FOR BUILDINGS: *W. Brandon* (*Brandon & Co.*).—The apparatus, for use in houses, conservatories, churches, and so on, comprises oil lamps or stoves fitted with tubular pipes or flues whose ends are set within the hot air or smoke chambers above the lamps; upon the pipes is placed the water vessel or moistening-tray.

14,369.—A METHOD OF GLAZING: *H. P. H. Gilson and W. J. Booer.*—The leaden glazing-bars are fashioned so that they shall be convex along one side, and with the flanges along the other side diminished in order to facilitate the turning back of the wings for the insertion of the glass; packing-strips of some flexible substance, such as india-rubber, are used for effecting a weather-proof joint.

14,376.—CUPOLA FURNACES: *W. Littleton.*—Upon its way to the tuyères the blast is caused to pass through a series of superimposed segments which constitute the furnace's upper portion, and the blast is directed from the segments to the tuyères through passages that are made in the fireclay brick lining of the furnace's lower portion. The shallow hearth is made with a wide sectional area, and metal rods fitted in vertical grooves in the segments are employed for an air-tight jointing of the segments.

14,433.—ROOFS AND ROOF-GLAZING: *C. Darnley, W. H. Wallis, and G. R. Carimel.*—Supporting-ribs are fashioned upon a rolled or pressed sheet steel or metal glazing-bar, and it has also a pierced channel which will serve for purposes of ventilation and of carrying off water of condensation. Between the glazing-bar's edges is inserted a leaden strip that has been folded over a metal wire or rod, and the strip's edges are then bent over the panes, the joints being packed, by preference with asbestos, or the sides of the bar may be rolled or pressed down closely together.

14,473-4.—MEANS OF HEATING BUILDINGS: *A. B. Reck.*—In an auxiliary apparatus for increasing the circulation of water in the pipes, it is contrived that flues leading from the furnace and steam pipes from a boiler shall heat the hot-water boiler, or the steam pipes alone may be adapted to that end. Steam passes in a pipe to the heater which effects the generation of steam in the upper portion of the outward flow pipe, which communicates with a steam separator, whereby circulation of the hot water is accelerated. When the steam has been condensed in the separator it is returned through a pipe into the steam boiler. By another method the same purpose is to be effected by causing steam which has passed into a receiver to generate steam in the out-flow pipe's upper part. Mixed water and steam are conveyed to the steam separator and hot water to the radiators, a pipe conducts the separated steam into a condenser, through which the return pipe is passed which conveys the cooled water from the radiators. In another shape the out-flow pipe is directed into a condenser, through which passes the return pipe. An expansion vessel may be substituted for the steam separator, and a boiler for the steam heating chamber.

14,506.—FASTENINGS FOR EMERGENCY EXIT DOORS: *H. C. Pruce.*—A pin upon the lower bolt is to be pressed by one of pivoted arms which carry a horizontal bar; racks and a pinion join the lower bolt to the upper bolt, and the two bolts become withdrawn from their respective sockets in the lintel and the sill when the bar is pressed towards the door. A swinging lever, whereon is a projection or lug that engages with a slot's lower end, holds the bolts when they are drawn backwards. By another arrangement, in lieu of the direct action of the pivoted arm upon one of the bolts, a fulcrum pin may be joined to the pinion or may constitute the pinion's axis.

14,546.—A COUPLING FOR PIPES: *F. G. S. Ham.*—For coupling together leaden and other pipes their ends are expanded into ferrules or sleeves, and then ferrules are inserted to hold the pipes to one another; the pipe-ends are burred down on to the ends of the ferrules, which, as also the collars, may be corrugated or ribbed, one of the ferrules over which the expanded pipe-ends are compressed is screw-threaded within so that it may take the next adjacent ferrule's projecting end, and on to the last ferrule is screwed a plug-cap which serves to stop the pipe-end. For joining the pipes to taps may be used screwed caps that engage with the outside ferrules.

14,577.—A FLUSHING CONTRIVANCE: *S. H. Adams.*—In this contrivance the inventor causes the flushing-head to be retained by a throttling of the flushing-inlet which is attached to the basin of the waste-water closet, and at the bottom of the basin he makes a channel, set diameter-wise, which communicates with the outlet that is formed in the shape of a funnel. The device admits of the flushing-cistern being situated immediately beneath the sink.

14,602.—PLATES FOR ROOFS AND WALLS: *F. Hoeniger.*—The plates or slabs intended for the construction of walls and roofs are made of cement, artificial stone, concrete, or other suitable materials, and are shaped into a corrugated form; they may further be provided with a framework of wire netting which is embedded in the plastic substance.

14,621.—PROPS FOR USE IN SHORING AND STRUTTING: *J. Gascoyne.*—A movable metallic crown, which is held in its place with tongues or by other suitable means, fits on to the upper end of the prop, which is made of metal and is of H-section; a wooden cap which bears against the roof is sustained with an auxiliary piece, also of wood, that can be held by the crown's upper surface as adapted for that purpose. The props may also be made of wood, and be formed to any section required.

14,638.—A HYDRAULIC APPLIANCE FOR USE WITH WINCHES AND THEIR LOWERING GEAR: *A. T. Dawson & J. Horne.*—The inventors' object is to furnish means for liberating the barrel when the load is to be lowered, and for freeing the band-brake of hydraulic winches. One end of a lever is joined to a rod and piston that move within a cylinder, whilst to the lever's other end are secured the ends of the band-brake. Under normal conditions, a spring presses the piston towards the right hand, so that the brake may remain in its place; but when it is desired to free the brake, water is caused to flow into the cylinder by means of a valve which lies at rest until the engine has been started for lifting the load and there is enough of pressure to move it. A friction clutch joins the barrel to the drum of the brake; a spring normally retains the clutch in action, but provision is made for releasing the clutch by means of a flow of water under pressure into a cylinder at the end.

14,669.—A FASTENING FOR DOOR KNOBS: *E. A. Allen.*—The knob and its neck have flanged portions pierced with squared holes, and the part of the knob that takes the spindle is made entirely of sheet, and not of cast, metal. When the socket-piece has been passed through, the knob and its necking can be clinched together by the doubling

over of the sides of the socket-piece. The joint can be soldered and strengthening washers of steel, having squared holes, may be used.

14,721.—FLUSHING APPARATUS: *A. N. Pasman.*—The tank is supplied with water that flows from beneath it through the service pipe until a ball rises from its seating above the tank and so closes an upper opening which communicates with an air-pipe; another ball that the water pressure forces down upon its seating closes the outlet at the bottom of the tank, but the lower ball (acting as a valve) can be lifted by the movement of a handle which operates by means of a crank upon a block underneath the ball; as the ball floats the tank is emptied, but when the valve returns to its seating, the tank becomes again filled. In a variant form of the invention the tank is furnished with two outlet openings that are to be closed with balls mounted upon side-arms attached to the lifting-block.

14,740.—CONSTRUCTION OF CISTERNS: *W. P. Butterfield.*—Metal tanks and cisterns are made with inner flanges upon their side and end plates, and the flanges are to be riveted or otherwise held together; for the vertical jointing the plates are bent and lapped to one another; a pocket for taking the end and side plates is made by folding the bottom plate, the joint being riveted; in order to render the joints watertight they should be soldered, or the tank may be immersed in a galvanising bath.

14,763.—AN APPLIANCE FOR USE BY DRAUGHTSMEN AND OTHERS: *W. Leitz.*—For the carriage and support of angle-gauges, T-squares, and drawing-boards whilst being used out of doors are devised two supports formed with a stay, and having a neck strap or sling; to the supports are secured bars whose hinge-checks carry another bar whereof the outer end is hinged to a band screwed on to the drawing-board; the T-square will slide upon the board, which has iron strips at the sides of its upper face, and is retained in position with springs that slide upon bars. Guides are made upon the T-square for taking the foot of an angle-gauge which is pierced for adjustment with the pin of a spring.

14,800. — VICES: *Werkzeugmaschinenfabrik A. Scharff's Nachfolger.*—For the gripping of variously sized tubes, &c. Parts of one jaw are shaped to fit into corresponding parts of the other jaw; to render the putting of the tubes into place more easy, one side of the jaw is cut away, and very short tubes can be gripped, since one jaw has a projection that will register with a corresponding part of the other jaw. On the one jaw is a flattened stud which a set-screw retains within the rounded portion of a keyhole-shaped slot in its base, and a tubular nut of the other jaw engages with the adjusting screw around whose axis the two jaws can be turned together. There are bolt-holes through which screws may be passed so as to fix the vice in a horizontal or a vertical position.

14,806.—ELECTRICITY QUANTITY METERS: *G. di P. Magini.*—For registering the duration of supply to an arc or incandescent lamp, &c. The current is supplied through the coils of two electro-magnets, should it exceed the strength allowed a weighted lever is moved by a magnet and the circuit becomes opened; a lever and a clutch are moved by the magnet, under influence of the proper current, so as to join a shaft to a loose pinion geared to number-wheels. A weighted stop is turned by one of the electro-magnets in order to start the balance-wheel of a clockwork train that drives the clutch and shaft so that the train drives the number-wheels as long as an adequate amount of current flows through the coil; as it runs down the train gives one turn to a crank disc which—if the clockwork is not rewound—ultimately moves a cut-out lever for an opening of the circuit. The removal of the winding key, which is loose, is prevented by a cone-shaped lug upon the key which also retains the cut-out lever and thereby prevents the use of current whilst the key, which gears with the crank-disc, is left upon the winding-stem.

MEETINGS.

FRIDAY, NOVEMBER 16.

Sanitary Institute (*Lectures for Sanitary Officers*).—8 p.m.

Institution of Mechanical Engineers.—Mr. J. D. Twinberrow on "Capacity of Railway Wagons as Affecting Cost of Transport." 8 p.m.

SATURDAY, NOVEMBER 17.

Carpenters' Hall, London Wall, E.C.—Examination in Sanitary Building Construction. Viva-voce examination. 12 noon.

Sanitary Institute (*Demonstrations for Sanitary Officers*).—Inspection at knacker-yard, Winthrop-street, Whitechapel, E. 3 p.m.

Dundee Institute of Architecture.—Visit to Leuchars Church and Earlshall, Fife.

MONDAY, NOVEMBER 19.

Sanitary Institute (*Lectures for Sanitary Officers*).—8 p.m.

TUESDAY, NOVEMBER 20.

Institution of Civil Engineers.—(1) Paper to be further discussed, "The Metropolitan Terminus of the Great Central Railway," by Messrs. G. A. Hobson and E. Wragge. (2) Paper to be read, time permitting, "Machinery for the Manufacture of Smokeless Powder," by Mr. Oscar Guttmann. 8 p.m.

Society of Designers.—Mr. Philip H. Newman on "Design in the Future." 8 p.m.

Royal Victoria Hall (*Waterloo-road, S.E.*).—Mr. W. H. Shrubsole, F.G.S., on "The Medicinal Wells of Old London." 8.30 p.m.

WEDNESDAY, NOVEMBER 21.

British Archæological Association.—(1) The Rev. H. J. D. Astley, M.A., on "The Congress at Leicester." (2) Mr. W. A. Donnelly on "The Mound Dwellings of Auchirgaich, Dumbartonshire," with illustrations. 8 p.m.

Society of Arts.—Opening meeting of session. Address by Sir John Evans, K.C.B., F.R.S. 8 p.m.

Edinburgh Architectural Society.—Mr. C. B. Cownie on "Quantity Surveying."

Builders' Foremen and Clerks of Works' Institution.—Ordinary meeting of the members. 8 p.m.

THURSDAY, NOVEMBER 22.

Institution of Electrical Engineers.—Mr. John Gavey on "Telegraphs and Telephones at the Paris Exhibition, 1900." 3 p.m.

Sanitary Institute (*Lectures for Sanitary Officers*).—8 p.m.

FRIDAY, NOVEMBER 23.

Architectural Association.—(Joint meeting with the Institution of Junior Engineers).—Mr. A. T. Walmisley on "The Use of Rolled Joists in Construction." 7.30 p.m.

Glasgow Architectural Craftsmen's Society.—Mr. W. U. Muir on "Duties of a Clerk of Works." 8 p.m.

Sanitary Institute (*Lectures for Sanitary Officers*).—8 p.m.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

November 1.—By DRIVERS, JONAS, & Co. (at Reading).

Sulhampstad Abbots, Berks.—Tyle Mill, house, and 5 a. 2 r. 21 p., f., r. 205*l.*	£3,600
Six cottages and 1 a. 3 r. 14 p. f.	800

By W. N. CHEATLE & HALL (at Rugeley).

Hill Ridware, Staffs.—Four enclosures, 13 a. 1 r. 4 p., f.	575

By WATERS & RAWLENCE (at Romsey).

Romsey, Hants.—The Duke's Head Inn and 2 r. 33 p., f.	2,450
Various enclosures of land, 86 a. 2 r. 26 p., f.	1,965
Plot of woodland, 6 a. 1 r. 20 p., f.	110
Stanbridge Ranville's Farm, 226 a. 3 r. 5 p., f.	2,950
Daman Cottage and 2 a. 3 r. 15 p., f.	405
Jewell's Cottage and 1 a. 2 r. 25 p., f.	240

November 5.—By HARDS & BRADLY.

Belgravia.—79 and 83, Claverton-street, u.t. 33 yrs., g.r. 10*l.*, r. 150*l.*	1,200
Lewisham.—3 and 4, Rhyme-rd., u.t. 95 yrs., g.r. 7*l.*	555

By WILLIAM HOUGHTON.

Bethnal Green.—42 and 44, Quilter-st., u.t. 24½ yrs., g.r. 8*l.* 8*s.*	405
15, Elwin st., u.t. 21½ yrs., g.r. 4*l.* 4*s.*	180
Buckhurst Hill.—1 and 2, Hillside Villas, f., r. 56*l.*	730
Leytonstone.—5, 7, 11, and 13, Harvey-rd., and 1 to 6, Harvey-gardens, u.t. 75½ yrs., g.r. 19*l.* 18*s.*	1,480
Walthamstow.—Howard-rd., Normanhurst and Crowhurst, f.	845

By TYSER, GREENWOOD, & CRIER.

Turnham Green.—41, 43, 61, and 63, Clifton-gardens, u.t. 93 yrs., g.r. 20*l.*	925

By T. G. WHARTON.

Forest Hill.—Kilmorie-rd., f.g.r.s 49*l.* 10*s.*, reversion in 98 yrs.	1,213
Tottenham.—Brereton-rd., &c., f.g.r.s 167*l.*, reversion in 98 yrs.	4,050
Beckenham.—Sirdar-ter., f.g.r.s 30*l.*, reversion in 96 yrs.	760
Fulham.—Bullow-rd., f.g.r.s 20*l.*, reversion in 98 yrs.	480

By ALFRED RICHARDS (at Tottenham).

Tottenham.—Northumberland Park, a plot of building land, f.	250
20 and 22, Stanley-rd., f.	550
Enfield.—8 and 10, Halifax-rd., u.t. 84 yrs., g.r. 6*l.*	300

November 6.—By GEORGE BILLINGS.

Stoke Newington.—136, Neville-rd., u.t. 64 yrs., g.r. 3*l.*, r. 32*l.*	365

By ROGERS, CHAPMAN & THOMAS.

Charing Cross.—22 and 23, Cockspur-st., area 2,300 ft., f., r. 565*l.*	22,150

By HEPPER & SONS (at Leeds).

Leeds.—28, 30, and 32, St. Paul's-st., f., r. 150*l.*	4,310
83, Kirkgate, f., r. 50*l.*	1,300
84 to 94 (even), Marsh-lane, and 3, Shannon-st., f.	1,880
5 to 11 (odd), Shannon-st., and 6, Burrell-ter., f.	480
11, Moorland-rd., f., r. 50*l.*	900

By DYER, SON, & HILTON (at Lewisham).

Lewisham.—37 and 39, Court Hill-rd., f., e.r. 62*l.*	750
Blackheath.—9, Bennett Park, u.t. 52 yrs., g.r. 11*l.*	380

By SEWELL & BARNES (at Forncett).

Forncett St. Peter, Norfolk.—A farmhouse and 4 a. 3 r. 3 p., f.	370
Two freehold cottages and 2 r. 1 p.	170

November 7.—By CHADWICK & SONS.

Balham.—1 to 21, Holly-grove, also Holly-grove, f.	4,922

By COLLINS & COLLINS.

Trafalgar-sq.—6, St. Martin's-mews, u.t. 28 yrs., g.r. 15*l.* 15*s.*	2,000

By FOSTER & CRANFIELD.

City of London.—Upper Thames-st., f.g.r. 45*l.*, reversion in 99 yrs.	1,225
Notting Hill.—29, Elgin-cres., u.t. 51 yrs., g.r., &c., 19*l.* 12*s.*, e.r. 75*l.*	340
Ivinghoe, Bucks.—Myrtle Villa and 1 a. 1 r. 12 p., f., r. 30*l.*	540

By HUMBERT & FLINT.

Virginia Water, Surrey.—Lyne-lane, two freehold cottages	345
Holloway.—96 and 98, Brecknock-rd., u.t. 48½ yrs., g.r. 14*l.*, r. 110*l.*	£1,015
Grove-rd., l.g. rents 92*l.*, u.t. 62½ yrs., g.r. 7*l.* 14*s.*	1,680
Fonthill-rd., f.g.r. 17*l.*, reversion in 66 yrs.	460
Benwell-rd., f.g. rents 128*l.*, reversion in 63 yrs.	3,460

By MIDDLETON & CRACKNELL.

Fulham.—7, Alderville-rd., f.	440

By VENTOM, BULL, & COOPER.

Twickenham.—Cross Deep-rd., two plots of land, 8 a. 0 r. 25 p., f.	6,500

By WILLIS & CROUCH.

Maida Vale.—Blomfield-rd., Randolph House, u.t. 37 yrs., g.r. 4*l.*, e.r. 175*l.*	1,560

By W. N. WILLOUGHBY.

Norwood.—14 to 20 (even), Harpenden-rd., u.t. 95 yrs., g.r. 29*l.* 8*s.*, r. 156*l.*	1,345

November 8.—By BOYTON, PEGRAM, & BUCKMASTER.

Acton.—51, Churchfield-rd. and 3, Burlington Mews, u.t. 76 yrs., g.r. 15*l.*, e.r. 95*l.*	595

By BRODIE, TIMBS, & Co.

Pimlico.—68, 81, and 85, Lupus-st., u.t. 27½ yrs., g.r. 33*l.*, r. 255*l.*	2,030
19 and 20, Glasgow-ter., u.t. 25 yrs., g.r. 12*l.* r. 80*l.*	575
St. John's Wood.—23 and 25, Queen's-ter., u.t. 19 years, g.r. 20*l.*, r. 106*l.*	730
Croydon.—22, 26, 28, 30, and 32, Handcroft-rd., u.t. 31½ yrs., g.r. 19*l.* 5*s.* 9*d.*	680

By CHESTERTON & SONS.

Lewisham.—87, Manor-rd., r. 36*l.*, also i.g.r. 6*l.*, u.t. 62 yrs., g.r. 13*l.*	300
Greenwich.—27, Egerton-rd., u.t. 72 yrs., g.r. 6*l.*, r. 33*l.*	400
Deptford.—200, Lewisham High-rd., u.t. 50 yrs., g.r. 9*l.* 6*s.*, r. 60*l.*	600
Bethnal Green.—Ramsey-st., a plot of building land, f.	240
Barnes.—Church-rd., coach-house and premises, area 2,500 ft., u.t. 97 yrs., g.r. 8*l.*	325

By GLASIER & SONS.

Tottenham.—Ashford-rd., f.g.r. 36*l.*, reversion in 78½ yrs.	760
Headcorn-rd., f.g.r. 18*l.*, reversion in 78½ yrs.	380
Cranbrook-rd., f.g.r.s 32*l.*, reversion in 78½ yrs.	685
Brereton-rd., f.g.r. 22*l.*, reversion in 78½ yrs.	465
Battersea.—Wayford-st., f.g.r.s 15*l.*, reversion in 75 yrs.	325

By KNIGHT & Co.

Kensington.—27, Eldon-rd., u.t. 32 yrs., g.r. nil.	1,070

By NEWBON, EDWARDS, & SHEPHARD.

Islington.—2A, Rheidol-ter., u.t. 16 yrs., g.r. 6*l.*, r. 35*l.*	170
Highbury.—10 and 12, Aubert Park, u.t. 80½ yrs., g.r. 16*l.*, r. 90*l.*	1,040
20, Hamilton-rd., u.t. 47 yrs., g.r. 7*l.* 7*s.*, r. 38*l.*	415
Barnsbury.—9 and 10, Matilda-st., u.t. 41 yrs., g.r. 10*l.* 10*s.*	550
Hornsey.—65, St. Mary's Hill, u.t. 88 yrs., g.r. 6*l.*	180
Wood Green.—8 and 9, Harcourt-rd., f., e.r. 68*l.*	840

By STIMSON & SONS.

Lambeth.—7 and 9, Newnham-ter., u.t. 22 yrs., g.r. 10*l.* 10*s.*, r. 67*l.* 10*s.*	460
Peckham.—109, Bellenden-rd., f., r. 50*l.*	640
11, Carden-rd., at 65 yrs., g.r. 6*l.*, r. 32*l.*	310
Streatham.—18 and 20, Tankerville-rd., u.t. 79 yrs., g.r. 13*l.* 10*s.*, r. 72*l.*	610
Battersea.—86 and 88, St. John's Hill, u.t. 94 yrs., g.r. 40*l.*, r. 150*l.*	1,400
Greenwich.—81, 83, 89, and 91, Woolwich Lower-rd., u.t. 56 yrs., g.r. 18*l.*	865
85 and 87, Woolwich Lower-rd., u.t. 56 yrs., g.r. 14*l.*, r. 87*l.*	825
Lewisham.—12 and 15, Spring-bank, u.t. 994 yrs., g.r. 25*l.*, r. 140*l.*	1,560

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£	s.	d.			
Hard Stocks	1	16	0	per 1,000	alongside, in river.	
Rough Stocks and Grizzles	1	12	0	,,	,,	,,
Smooth Bright Facing Stocks..	2	18	0	,,	,,	,,
Shippers	2	6	0	,,	,,	,,
Flettons.....	1	10	6	,,	at railway depôt.	
Red Wire Cuts ..	1	15	6	,,	,,	,,
Best Fareham Red	3	11	6	per 1,000	at railway depôt.	
Best Red pressed Ruabon Facing.	5	5	0	,,	,,	,,
Best Blue Pressed Staffordshire ..	4	7	0	,,	,,	,,
Do., Bullnose	4	12	0	,,	,,	,,
Best Stourbridge Fire Bricks	4	4	6	,,	,,	,,
GLAZED BRICKS.						
Best White and Ivory Glazed Stretchers.....	13	0	0	,,	,,	,,
Headers	12	0	0	,,	,,	,,
Quoins, Bullnose, and Flats	17	0	0	,,	,,	,,
Double Stretchers	19	0	0	,,	,,	,,
Double Headers..	16	0	0	,,	,,	,,
One Side and two Ends	19	0	0	,,	,,	,,
Two Sides and one End	20	0	0	,,	,,	,,
Splays, Chamfered, Squints	20	0	0	,,	,,	,,

See also next page.

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

(For some Contracts, &c., still open, but not included in this List, see previous issues.)

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c., Supplied by	Tenders to be delivered
*Sewering, Levelling, Paving, &c.	Bromley U.D.C	Surveyor, Council Offices, Bromley, Kent	Nov. 19
Fireclay Goods	Manchester Corporation	C. Nickson, Town Hall, Manchester	Nov. 20
Bungalows, Whitehead, Antrim		J. Russell, Civil Engineer, 22, Waring-street, Belfast	do.
Schools, Salisbury-road	Plymouth School Board	H. J. Snell, Architect, 11, The Crescent, Plymouth	do.
Twenty-one Cottages, Sutton Court Drive, Eastwood		E. J. Hammond, Civil Engineer, New Brompton, Kent	do.
Mill, Stoneferry-road, Hull	Mr. J. Wilson	W. R. Nunns, Architect, Market-street, Bingley	do.
Carriage Shed, &c., Wakefield	Lancs & Yorks Railway Company	R. C. Irwin, Hunt's Bank, Manchester	do.
Shed, &c., Nelson, Lancs.	do.	Engineer, Hunt's Bank, Manchester	do.
Additions to Station, Southport	do.	do.	do.
Public House, Sheffield		G. A. Wilson, Architect, Hartshead Chambers, Sheffield	do.
Road Works, Camberley	Frimley U.D.C.	F. C. Uren, Civil Engineer, High-street, Camberley	do.
Shops and Residences, High West-street, Dorchester		F. Cooper, Architect, 77, East-street, Bridport	Nov. 21
Arc Lamps, &c.	Newcastle-on-Tyne Corporation	Hopkinson & Talbot, Engineers, 29, Princes-street, Manchester	do.
Granite Kerbing		E. R. Harmsworth, Shoreham	do.
Road Works	Birkenhead Corporation	C. Brownridge, Civil Engineer, Town Hall	do.
Eighteen Houses, Spencer-street, Keighley		J. Haggas, Architect, North-street, Keighley	do.
Infirmary Staircases, Hellingly	Hailsham (Sussex) Guardians	Clerk, Guardians' Offices, Hailsham	do.
Road, Hunger-hill	Otley (Yorks) U.D.C.	J. Waugh, Civil Engineer, Bradford	do.
*Repairs to Tar Paving at Brook Hospital	Metropolitan Asylums Board	Offices, Embankment, E.C.	Nov. 22
Ten Houses, Ingrow, Keighley		W. H. & A. Sugden, Architects, Keighley	do.
Engine House, &c., Tees Cottage	Darlington Corporation	T. & C. Hawksley, Civil Engineers, 30, Great George-street, S.W.	do.
Additions to Premises, Regent-road, Gt. Yarmouth	Mr. J. W. Argile	C. G. Baker, Architect, Great Yarmouth	Nov. 23
Bridge, Hogsthorpe	Spilsby R.D.C.	T. A. Busbridge, Civil Engineer, Spilsby, Lincs	do.
Electric Lighting Plant, &c.	Belfast Corporation	V. A. H. McCowen, Engineer, Town Hall, Belfast	do.
House, New Malden, Surrey		T. V. J. Davison, Bartley Lodge, New Malden	do.
Granite Road Metal	Romford U.D.C.	C. T. King, Council Offices, Romford	do.
Stone Lime	Maldens & Coombe U.D.C.	T. V. H. Davison, Engineer, Cambridge-road, New Malden	do.
*Alterations at Infirmary Mortuary	St. George-in-the-East Guardians	G. A. Wilson, Vestry Hall, Cable-street, E.	do.
Pipe Sewer, &c., Walshaw	Tottington (Lancs) U.D.C.	L. Kenyon, Surveyor, 33, Chapel-street, Tottington	Nov. 24
Waterworks	Wenlock Town Council	T. S. Stooke, Civil Engineer, Severn Villa, Shrewsbury	do.
*Engine House, &c.	Croydon County Council	Borough Engineer, Town Hall, Croydon	Nov. 24
Kerbing, &c., High-street, Ascot	Windsor R.D.C.	Mr. Menzies, Englefield Green, Surrey	do.
Hospital, Hill Top, near Bromsgrove		H. R. Lloyd, Architect, 33, Newhall-street, Birmingham	do.
Club Building, York-road, Maidenhead		Davy & Salter, Architects, High-street, Maidenhead	do.
Additions to Schools, Railway-road, Leigh		Banks & Co., Architects, Church-street, Leigh, Lancs	do.
Eight Houses, Llansamlet	Mr. E. E. Bevan	J. C. Rees, Architect, Neath	do.
Paving Works, &c.	Hastings School Board	A. Wells, Architect, Queen's-chambers, Hastings	do.
Street Works, Emscote-street	Halifax Corporation	J. Lord, Engineer, Town Hall	do.
Engine House, &c.	Newmarket U.D.C.	Beesley & Co., Engineers, 11, Victoria-street, S.W.	do.
*Repairs to Public Well at Canewdon, Rochford, Essex	Rochford U.D.C.	See Advertisement	do.
Schools, Wheeler-street	Hull School Board	B. S. Jacobs, Architect, Bowl Alley-lane, Hull	Nov. 27
*Iron Fencing	Walthamstow School Board	School Board Office, High-street, Walthamstow	do.
Electrical Equipment	Cardiff Corporation	A. Ellis, Electrical Engineer, Old Post Office-buildings, Cardiff	Nov. 28
Laundry Buildings	Sheppey (Kent) Union Guardians	W. L. Grant, Architect, Sittingbourne	do.
Road Works, Byron-road, &c.	Gillingham (Kent) U.D.C.	F. C. Boucher, Gardiner-street, New Brompton	Nov. 29
*Technical School	Watford U.D.C.	W. H. Syme, Architect, 4, High-street, Watford	do.
*Extension of Sewer	Brighton County Council	Borough Engineer, Town Hall, Brighton	Nov. 30
*Car Depôt and Workshops	Salford Tramways Committee	Tramways Engineer, Town Hall, Salford	do.
Sewerage Works	Dunstable Corporation	W. H. Radford, Civil Engineer, King-street, Nottingham	Dec. 1
*Schools, Gainsford-road, Walthamstow	Walthamstow School Board	G. E. T. Lawrence, 22, Buckingham-street, Adelphi, W.C.	Dec. 4
*Technical Schools	Southend-on-Sea Corporation	Town Clerk, Southend-on-Sea	Dec. 6
Sewerage Works	Walton-on-the-Naze U.D.C.	Beesley, Son & Nichols, Engineers, 11, Victoria-street, S.W.	do.
*Infant School	Romford School Board	Albert-road School, Romford	Dec. 10
Bridge, Houghton Coats	Lancs County Council	County Bridgemaster, Preston	do.
Drainage Works, South Holmwood	Dorking R.D.C.	W. Rapley, jun., Clovelly, Tower Hill, Dorking	Dec. 11
*Custom House at Southampton	H.M. Office of Works	Collector of Customs, Custom House, Southampton	do.
Business Premises, Alloa, N.B.	British Electric Plant Co., Ltd.	Secretary, 19, Waterloo-street, Glasgow	No date
Wesleyan Church, Beeston, Notts	Messrs. J. Kay & Sons	W. J. Morley, Architect, 269, Swan-arcade, Bradford	do.
Four Houses and Offices, Tenterden-street, Bury	Messrs. Schunck & Co.	Openshaw & Gill, Architects, 6, Fleet-street, Bury, Lancs	do.
Work at Electricity Station, Keighley	Messrs. Phillips & Son	J. M. Smyth, Electrical Engineer, Bridge-street, Keighley	do.
Additions to Warehouse, Great George-street, Leeds	Kendal Corporation	Bedford & Kitson, Architects, Greek-street-chambers, Leeds	do.
Inn, Abersychan	Manchester Corporation	W. Gardner, Architect, 14, Victoria-road, Newport	do.
Electrical Plant	Mrs. Stedall	Handcock & Dykes, Engineers, 1, Victoria-street, S.W.	do.
Haslingden Grit Setts		Surveyor, Highways Department, Town Hall, Manchester	do.
House, Whitby		H. G. Walker, Architect, West Cliff, Whitby	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary	Application to be in
*Architectural Assistant	Newport (Mon.) Corporation	3l. per week	Nov. 21
*Junior Assistant	do.	80l. per annum	do.
*Clerk of Works	Enfield U.D.C.	3l. per week	do.
*Architectural Assistant	Garston U.D.C.	2l. 10s. per week	Nov. 22
*Engineering Assistants (2)	Grimsby Corporation	120l. per annum each	Dec. 5

Those marked with an asterisk (*) are advertised in this Number. Competitions, p. —. Contracts, pp. iv. vi. viii. x. & xix. Public Appointments, pp. xvi. xvii. & xix.

PRICES CURRENT (*Continued*).

	£	s.	d.		
Best Dipped Salt Glazed Stretchers and Headers	12	0	0	per 1,000 at railway depôt.	
Quoins, Bullnose, and Flats	14	0	0	,,	,, ,,
Double Stretchers	15	0	0	,,	,, ,,
Double Headers	14	0	0	,,	,, ,,
One Side and two Ends	15	0	0	,,	,, ,,
Two Sides and one End	15	0	0	,,	,, ,,
Splays, Chamfered, Squints	14	0	0	,,	,, ,,
Seconds Quality White and Dipped Salt Glazed	2	0	0	,,	less than best.

	s.	d.	
Thames and Pit Sand	8	0	per yard, delivered.
Thames Ballast	6	9	,, ,,
Best Portland Cement	3½	0	per ton ,,
Best Ground Blue Lias Lime	24	6	,, ,,

NOTE.—The cement and lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 12s. 6d. per yard, delivered.
Stourbridge Fire-clay in sacks, 32s. 6d. per ton at rly. dpt.

PRICES CURRENT (*Continued*).

STONE.

	s.	d.		
Ancaster in blocks	2	0	per ft. cube, deld. rly. depôt	
Bath ,,	1	7	,,	,,
Farleigh Down Bath	1	8	,,	,,
Beer in blocks	1	6½	,,	,,
Grinshill ,,	2	10	,,	,,
Brown Portland in blocks	2	2	,,	,,
Darley Dale ,,	2	2½	,,	,,
Red Corsehill ,,	2	5	,,	,,
Red Mansfield ,,	2	4½	,,	,,
Hard York ,,	2	10	,,	,,
Hard York 6 in. sawn both sides landings, to sizes (under 40 ft. sup.)	2	8	per ft. super. at rly. depôt.	
,, ,, 6 in. Rubbed Ditto	3	0	,,	,,
,, ,, 3 in. sawn both sides slabs (random sizes)	1	3	,,	,,
,, ,, 3 in. self-faced Ditto	0	9½	,,	,,

SLATES.

in.	in.	£	s.	d.	
20 × 10	best blue Bangor	11	5	0	per 1000 of 1200 at ry. dep.
,,	best seconds ,,	10	15	0	,, ,,
16 × 8	best ,,	6	2	6	,, ,,

PRICES CURRENT (*Continued*).

	£	s.	d.		
20 × 10 best blue Portmadoc	10	18	0	per 1000 of 1200 at ry. dep.	
16 × 8 best blue Portmadoc	6	0	0	,,	,,
20 × 10 best Eureka unfading green	11	2	6	,,	,,
16 × 8 ,, ,,	6	15	0	,,	,,
20 × 10 Permanent green	10	0	0	,,	,,
16 × 8 ,, ,,	5	12	6	,,	,,

TILES.

	s.	d.		
Best plain red roofing tiles	41	6	per 1,000	at rly. depôt
Hip and valley tiles	3	7	per doz.	,, ,,
Best Broseley tiles	4½	6	per 1,000	,, ,,
Hip and valley tiles	4	0	per doz.	,, ,,
Best Ruabon Red, brown or brindled Do. (Edwards)	57	6	per 1,000	,, ,,
Do. ornamental Do.	60	0	,,	,, ,,
Hip tiles	4	0	per doz.	,, ,,
Valley tiles	3	9	,,	,, ,,
Best Red or Mottled Staffordshire Do. (Peakes)	50	9	per 1,000	,, ,,
Hip tiles	4	1	per doz.	,, ,,
Valley tiles	3	8	,,	,, ,,

PRICES CURRENT (*Continued*).

WOOD.

BUILDING WOOD.—YELLOW.

	At per standard. £ s. d.	£ s. d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	16 10 0	18 0 0
Deals: best 3 by 9	14 10 0	15 10 0
Battens: best 2½ in. by 7 in. and 8 in. and 3 in. by 7 in. and 8 in.	12 10 0	13 10 0
Battens: best 2½ by 6 and 3 by 6	0 10 0	less than 7 in. and 8 in.
Deals: seconds	1 0 0	less than best
Battens: seconds	0 10 0	" "
Fir timber: Best middling Danzig or Memel (average specification)	At per load of 50 ft. 4 10 0	5 0 0
Seconds	4 5 0	4 10 0
Small timber (8 in. to 10 in.)	3 12 6	3 15 0
Swedish balks	2 15 0	3 0 0
Pitch pine timber (35 ft. average)	4 0 0	4 10 0

JOINERS' WOOD.

	At per standard.	
White Sea: First yellow deals, 3 in. by 11 in.	27 10 0	28 10 0
3 in. by 9 in.	24 0 0	25 0 0
Battens, 2½ in. and 3 in. by 7 in.	20 0 0	21 0 0
Second yellow deals, 3 in. by 11 in.	22 10 0	24 0 0
" " 3 in. by 9 in.	20 0 0	21 0 0
Battens, 2½ in. and 3 in. by 7 in.	16 10 0	18 0 0
Third yellow deals, 3 in. by 11 in. and 9 in.	16 10 0	18 0 0
Battens, 2½ in. and 3 in. by 7 in.	13 10 0	14 10 0
Petersburg: first yellow deals, 3 in. by 11 in.	25 0 0	26 0 0
Do. 3 in. by 9 in.	22 0 0	23 0 0
Battens	16 10 0	17 10 0
Second yellow deals, 3 in. by 11 in.	18 10 0	20 0 0
Do. 3 in. by 9 in.	17 0 0	18 0 0
Battens	14 0 0	14 10 0
Third yellow deals, 3 in. by 11 in.	15 0 0	16 10 0
Do. 3 in. by 9 in.	14 0 0	14 10 0
Battens	12 10 0	13 10 0
White Sea and Petersburg:—		
First white deals, 3 in. by 11 in.	15 10 0	16 10 0
" " " 3 in. by 9 in.	14 0 0	15 0 0
Battens	12 10 0	13 10 0
Second white deals 3 in. by 11 in.	14 0 0	15 0 0
" " " 3 in. by 9 in.	13 0 0	14 0 0
" " battens	11 0 0	12 0 0
Pitch pine: deals	16 0 0	18 0 0
Under 2 in. thick extra	0 10 0	1 0 0
Yellow Pine—		
First, regular sizes	30 0 0	33 0 0
Broads (12 in. and up)	2 0 0	more.
Oddments	22 0 0	24 0 0
Seconds, regular sizes	24 10 0	26 10 0
Yellow Pine Oddments	20 0 0	22 0 0
Kauri Pine—		
Planks, per ft. cube	0 3 6	0 4 6
Dantzig and Stettin Oak Logs—		
Large, per ft. cube	0 2 6	0 2 8
Small " "	0 2 4	0 2 7
Wainscot Oak Logs, per ft. cube	0 5 0	0 5 6
Dry Wainscot Oak, per ft. sup. as inch	0 0 8	0 0 9
¼ in. do. do.	0 0 7	- - -
Dry Mahogany—		
Honduras, Tabasco, per ft. sup. as inch	0 0 9	0 0 11
Selected, Figury, per ft. sup. as inch	0 1 6	0 2 0
Dry Walnut, American, per ft. sup. as inch	0 0 10	0 1 0
Teak, per load	16 0 0	20 0 0
American Whitewood Planks—		
Per ft. cube	0 2 3	0 3 0

JOISTS, GIRDERS, &c.

	In London, or delivered to Railway Vans, per ton. £ s. d.	£ s. d.
Rolled Steel Joists, ordinary sections	9 2 6	10 2 6
Compound Girders " "	12 5 0	13 10 0
Angles, Tees and Channels, ordinary sections	12 10 0	14 10 0
Flitch Plates	11 7 6	12 0 0
Cast Iron Columns and Stanchions, including ordinary patterns	8 15 0	10 10 0

METALS.

	Per ton, in London. £ s. d.	£ s. d.
IRON.—		
Common Bars	9 15 0	10 5 0
Staffordshire Crown Bars, good merchant quality	10 10 0	11 0 0
Staffordshire "Marked Bars"	13 0 0	- - -
Hoop Iron, basis price	11 0 0	11 10 0
" " galvanised	17 0 0	- - -
(* And upwards, according to size and gauge.)		
Sheet Iron, Black.—		
Ordinary sizes to 20 g.	11 5 0	- - -
" " to 24 g.	12 10 0	- - -
" " to 26 g.	13 10 0	- - -
Sheet Iron, Galvanised, flat, ordinary quality.—		
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	14 15 0	- - -
" " 22 g. and 24 g.	15 5 0	- - -
" " 26 g.	16 15 0	- - -
Sheet Iron, galvanised, flat, best quality.—		
Ordinary sizes to 20 g.	18 0 0	- - -
" " 22 g. and 24 g.	18 10 0	- - -
" " 26 g.	20 0 0	- - -
Galvanised Corrugated Sheets.—		
Ordinary sizes, 6 ft. to 8 ft. 20 g.	13 15 0	14 10 0
" " 22 g. and 24 g.	14 10 0	15 10 0
Cut nails, 3 in. to 6 in. (Under 3 in. usual trade extras.)	11 10 0	- - -
LEAD—Sheet, English, 3 lbs. & up.	20 5 0	- - -
Pipe in coils	20 15 0	- - -
Soil Pipe	23 15 0	- - -

PRICES CURRENT (*Continued*).

	£ s. d.	£ s. d.
ZINC—Sheet—		
Vieille Montagne ton	28 0 0	- - -
Silesian	27 10 0	- - -
COPPER—		
Strong Sheet per lb.	0 1 1	- - -
Thin "	0 1 3	- - -
Copper nails "	0 1 3	- - -
BRASS—		
Strong Sheet "	0 0 11	- - -
Thin "	0 1 1	- - -
TIN—English Ingots "	0 1 6	- - -
SOLDER—Plumbers' "	0 0 8	- - -
Tinmen's "	0 0 10	- - -
Blowpipe "	0 1 0	- - -

ENGLISH SHEET GLASS IN CRATES.

15 oz. thirds	2½d. per ft. delivered.
" fourths	2¾d. " "
21 oz. thirds	3¼d. " "
" " fourths	3d. " "
26 oz. thirds	4¼d. " "
" " fourths	4d. " "
32 oz. thirds	5¼d. " "
" " fourths	5d. " "
Fluted sheet, 15 oz.	3¼d. " "
" " 21 "	4¼d. " "
½ Hartley's Rolled Plate	3d. " "
⅝ " " "	3¼d. " "
¾ " " "	4d. " "

OILS, &c.

	£ s. d.
Raw Linseed Oil in pipes per gallon	0 3 1
" " " in barrels "	0 3 2
" " " in drums "	0 3 4
Boiled " " in pipes "	0 3 4
" " " in barrels "	0 3 5
" " " in drums "	0 3 7
Turpentine, in barrels "	0 2 7
" in drums "	0 2 9
Genuine Ground English White Lead per ton	27 5 0
Red Lead, Dry "	24 10 0
Best Linseed Oil Putty per cwt.	0 9 6
Stockholm Tar per barrel	1 10 0

VARNISHES, &c.

	per gallon. £ s. d
Fine Elastic Copal Varnish for outside work	0 16 6
Best Elastic Copal Varnish for outside work	1 0 0
Best Elastic Carriage Varnish for outside work	0 16 6
Best Hard Oak Varnish for inside work	0 10 6
Best Extra Hard Church Oak Varnish for inside work	0 10 6
Fine Hard Copal Varnish for inside work	0 16 0
Best Hard Copal Varnish for inside work	1 0 0
Best Hard Carriage Varnish for inside work	0 16 0
Extra Pale Paper Varnish	0 12 0
Best Japan Gold Size	0 10 0
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 9 0
Berlin Black	0 15 0
Knotting	0 10 0
Best French and Brush Polish	0 10 0

TO CORRESPONDENTS.

W. S.—J. S. M. (Amounts should have been stated.) H. P. (Shall have attention).

NOTE.—The responsibility of signed articles, letters, and papers read at meetings, rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article is given subject to the approval of the article, when written, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than 10 a.m. on Thursdays*. N.B.—We cannot publish tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of tenders accepted unless the amount of the tender is given, nor any list in which the lowest tender is under £100, unless in some exceptional cases and for special reasons.]

*** Denotes *accepted*. † Denotes *provisionally accepted*.**

CARBIS BAY.—For proposed New Connexion Chapel near Carbis Bay. Mr. Sampson Hill, architect, Redruth:—

Jennings	£829	Glasson	£618
Hosking	798	Williams	600
Toy	776	Pearce, Carbis Bay*	578

EAST SHEEN.—For the erection of a residence in Blind-lane, East Sheen, for Miss Beachcroft. Mr. Ernest Pennington, architect, Richmond, Surrey:—

J. W. Brooking	£1,467	E. Seaber*	£858

EPSOM.—For rebuilding the Epsom Brewery for Messrs. Bradley & Son. Messrs. R. W. Andrews & Co., brewery architects and engineers, 148 and 150, Pentonville-road, London, N.:—

Shopland	£2,700	Harris	£2,387
Potter	2,569	Cropley Bros., Ltd.*	2,197

EXMOUTH.—For the erection of a new dispensary. Mr. Ernest E. Ellis, architect, Exmouth:—

T. Abell	£1,062
G. Hooper	914
Building.	
H. Dart	849
A. Hayman	799
W. J. Stokes	795
J. J. Lacey, Exmouth*	740
Plumbing.	
Webster	105
G. Bennett	86 10
Hubber & Son, Exeter, Exmouth*	85

Architect's estimate, £864.

EXMOUTH.—For the erection of a furniture depository for Messrs. Blackmore & Sons. Mr. Ernest E. Ellis, architect, Exmouth:—

	First.	Amended.
F. Farrant	£558	—
J. J. Lacey	550	£476
Cooper & Son	531	550
W. H. Perry	524	485
H. Dart, Exmouth*	519 10	460
W. J. Stokes	493 16 10	385
A. Hayman	—	499

GODALMING.—For the construction of sewers, Farncombe, for the Corporation. Mr. J. H. Norris, Borough Surveyor, Municipal Offices, Bridge-street, Godalming:—

Clift Ford	£639	A. & A. Streeter, Meadrow, Godalming*	£457
Mitchell Bros.	577		
G. Richardson	508 10		

GODALMING.—For the construction of filter beds at the sewage farm, Unstead, for the Corporation. Mr. J. Herbert Norris, Borough Surveyor, Municipal Offices, Bridge-street, Godalming:—

A. A. Streeter	£1,437 7	Clift Ford, Harlesden, N.W.*	£1,297
Mitchell Bros.	1,375		

LEWES.—For building an electricity generating station for the Electrical Power Distribution Company, Limited. Mr. W. C. F. Gillam, architect, Brighton:—

Cooke & Co.	£5,150	Martin	£3,875
Longley & Co.	4,945	Hibberd Bros.	3,797
Patman & Fothergham	3,973	Field & Co., Brighton*	3,777
Wallis	3,880		

NEWCASTLE-UNDER-LYME (Staffs).—For the erection of a hospital for infectious diseases, for the Urban Sanitary Authority. Mr. J. Lewis, Newcastle-under-Lyme, and Mr. Frank Emery, Stoke-on-Trent, joint architects. Quantities by architects:—

G. K. Downing	£6,213	Saml. Wilton, jun.	£5,752
Thos. Maddock	6,012	Bennett Bros., Burslem*	5,241
Thos. Godwin	5,960		
John Gallimore	5,775		

TEDDINGTON.—For structural and decorative repairs and new drainage at "The Weir House," Teddington, for Mr. H. J. Chinney. Mr. Ernest Pennington, architect, Richmond, Surrey:—

Seal & Co.	£976	C. Eldridge*	£530
J. F. Collinson	593		

TWICKENHAM.—For the completion of ten houses in Waldegrave-road and Southfield-gardens, for Mr. H. P. Edwards. Mr. Ernest Pennington, architect, Richmond, Surrey:—

E. Seaber	£2,300	G. W. Street*	£2,150

TWICKENHAM.—For the erection of two shops, with warehouses in rear, in Crown-road, Twickenham, for Mr. Vincent Bell. Mr. Ernest Pennington, architect, Richmond, Surrey:—

J. W. Brooking	£2,435	E. B. Tucker*	£1,617
Speechley & Smith	2,005		

LONDON SCHOOL BOARD TENDERS.

AT the last meeting of the London School Board, the Works Committee submitted the following list of tenders. Mr. T. J. Bailey is the Board's Architect:—

EARDLEY-ROAD—(Enlargement)—Boys, 130; girls, 130; infants, 130; total, 390. Providing three new classrooms for each department, 50, 40, 40; new staircases for boys and girls; corridors and cloakrooms for each department; additional lavatory for girls; additional lavatory basins for infants; providing stock cupboards in infants' hall; internal female teachers' water-closet; re-arranging and providing additional water-closets for boys and girls, and providing new block of water-closets for infants; altering existing division wall between playgrounds; providing combined cookery and laundry centre, and removing and refixing girls and infants' covered playground:—

B. E. Nightingale	£8,785	W. Downs	£8,215
Bulled & Co.	8,509	W. Smith	8,187
F. & H. F. Higgs	8,423	Smith & Sons, Ltd.	8,152
Lawrance & Sons	8,254	Johnson & Co., Ltd.	8,022
Lathey Bros.	8,221	J. & C. Bowyer*	7,988

LYHAM-ROAD.—Repairing desks and seats:—

General Builders, Ltd.	£189	Hammer & Co., Ltd.	£135
London School Furniture Co.	145	Wake & Dean, Ltd.	96
		H. Bouneau	90
		T. Cruwys*	82

[See also next page.

MARLBOROUGH-ROAD.—Repairing stoves :—

Wontner - Smith, Gray, & Co.	£79 0	Rockhill Bros.	£40 0
Lander & Co.	45 0	Hendry & Pattisson, Ltd.	39 15
Coules & Son	44 10	J. Bond*	36 0
Cannon & Sons	40 0		

UPTON HOUSE (Truant School).—Providing and fixing new steam boiler, including necessary connexions to main flue, connecting up to existing steam pipes, and running steam service to new swimming bath, also providing and fixing low-pressure steam heating apparatus to dressing-room, and auxiliary heating to new hall, including providing and fixing two spray baths and five ranges of cocks and pipes, &c., over the lavatory troughs, and laying on hot and cold water to same, also providing additional heating surface and overhauling existing heating apparatus :—

Fraser & Son	£1,087 10 0	Oldroyd & Co., Ltd.	£702 0 0
J. Grundy	1,080 0 0	Dargue, Griffiths, & Co., Ltd.	621 1 6
Cannon & Sons	925 0 0	Duffield & Sons*	560 0 0
J. Esson	798 0 0		
J. & F. May	740 0 0		

WHITE LION-STREET.—Erecting schoolkeeper's house :—

L. H. & R. Roberts	£1,095	Williams & Son	£997
Barrett & Power	1,082	Marchant & Hirst	944
T. L. Green	1,079	Stevens Bros.	932
Thompson & Beveridge	1,049	F. Bull	911
		R. S. Buckeridge*	824

WINSTANLEY-ROAD SCHOOL. — Improvements (boys and girls' departments). Providing new halls, staircases, cloak and teachers' rooms, and lavatories ; re-dividing, re-stepping, and re-seating, and providing additional lighting to existing classrooms ; removing steps from present staircase and forming corridor for access to classroom, also forming playgrounds under school for boys and girls ; providing boiler-room and heating apparatus ; altering division wall between playgrounds. Revised accommodation :—Boys, 292 ; girls, 290 ; infants, 387 (unaltered). Total, 967. Net loss of 76 places (boys and girls) :—

B. E. Nightingale	£12,531	Smith & Sons, Ltd.	£11,095
Marsland & Sons	11,765	Johnson & Co., Ltd.	10,984
W. Downs	11,581	J. & C. Bowyer	10,734
Treasure & Son	11,430	Stimpson & Co.	10,730
Kirk & Randall	11,337	Lorden & Son*	9,888
F. & H. F. Higgs	11,248		

Repairs to Buildings on the Schedule of Prices.

(i.) FINSBURY—Group 6 :—

McCormick & Sons	+23⅓ per cent. on Schedule.
Barrett & Power	+25 " " "
C. & W. Hunnings	+22½ " " "
Stevens Bros.*	+22½ " " "

(ii.) GREENWICH—Group 3 :—

W. Banks	+33⅓ per cent. on Schedule.
G. Kemp	+33⅓ " " "
S. Musgrove	+30 " " "
W. J. Howie*	+25 " " "

(iii.) TOWER HAMLETS—Group 1 :—

T. Haydon	+35 per cent. on Schedule.
J. F. Holliday	+30 " " "
A. E. Symes	+27½ " " "
Bruce, Croom & Co.	+25 " " "
D. Gibb & Co.	+25 " " "
Barrett & Power*	+25 " " "

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David Allen & Sons, Ltd.	13 15 0	22 5 0	30 15 0	47 0
Standidge & Co., Ltd.	13 0 0	21 0 0	26 0 0	40 0
Waterlow & Sons, Ltd.	11 13 2	18 18 9	25 14 0	39 3
Alexander & Shepheard, Limited	10 10 0	17 0 0	25 0 0	39 0
F. Tarrant & Son	10 0 0	16 10 0	23 0 0	36 0
Vincent Brooks, Day, & Son, Limited	9 2 6	15 10 0	21 17 6	34 5
Henderson & Spalding	11 10 0	15 10 0	19 10 0	27 10
Hazell, Watson, & Viney, Limited*	9 5 0	13 10 0	17 14 0	26 0

Supply of the following articles, on running contracts :—Attendance boards for manual training centres, sand boxes, needlework boards.

	Attendance Boards. Each.	Sand Boxes. Each.	Needlework Boards. Each.
	s. d.	s. d.	£ s. d.
H. Bouneau	4 0	*3 11	1 4 10
T. Cruwys	3 10	4 0	1 5 0
Educational Supply Association, Ltd.	—	—	†0 14 3
R. H. Galbraith	7 6	6 6	—
General Builders, Ltd.	—	7 6	—
Hammer & Co., Ltd.	5 6	6 3	1 0 0
London School Furniture Co.	7 6	5 0	1 0 0
Lonnie & Co.	—	—	2 4 6
J. H. W. Martin	4 6	4 0	*0 17 6
Spencer & Co.	—	—	2 8 9
J. E. Tuckett	6 6	7 0	—
Wake & Dean, Ltd.	*3 0	4 0	—

† This quotation is not in accordance with the Board's specification.

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